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COVER: Pyrethrum flowers (*Chrysanthemum cinerariaefolium*) are now back on the civilian market in vast quantities for insecticidal use. Last year 18,270,000 pounds were imported from Kenya, Belgian Congo and Brazil, but most of it went to the armed forces. The Army's aerosol "bomb," now being supplied to civilians, contains pyrethrum for quick "knockdown" and DDT for prolonged effect. Improved extracts containing the pyrethrins have been developed through use of nitromethane as a solvent in the purifying process. Pyrethrin content is highest in the daisy-like flowers when about one-third to one-half of the florets in the central disk are open (see large flower, lower center).

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PENICILLIN PROBLEMS

"IT has come to our attention that sales representatives of some penicillin manufacturers have informed pharmacists that penicillin troches may be sold over the counter without a prescription." This charge by the Food and Drug Administration is a serious one. We do not believe it would have been made without the backing of sound evidence. No doubt the odious practice of spreading such misinformation can be attributed to some sales-hungry salesmen, and is not condoned by their employers.

Certain pharmacists have thus been led to fill requests for troches without a prescription, despite the "prescription-only" legend appearing on all forms of oral penicillin. Under present labeling regulations drugs are restricted to prescriptions, in general, if they cannot be used safely or efficaciously by the average layman without medical supervision. If products that do not fall in this class bear the prescription legend unjustifiably, the pharmacist has recourse through FDA to get the labeling changed. But he is legally bound to observe the prescription legend when present on a label, any other advice to the contrary, notwithstanding. However debatable may be the proper classification of certain drugs, there can be little doubt about the present status of penicillin products.

Accumulated evidence makes it clear why penicillin products cannot be made available except under medical supervision. Of course, penicillin's fleeting action has always required carefully controlled dosage and treatment schedules to assure effectiveness. Pharmacists are also aware of the increasing frequency of reported sensitivity to penicillin. Kolodny and Denhoff, for example, recently reported that of 124 patients studied, 25% of those with dermatologic involvement had penicillin reactions, and 6% of the nondermatologic cases had reactions.

Another complication of therapy is the possible development of penicillin-resistant strains of infectious organisms. Most investigators now agree that this could occur when attempted treatment is inadequate.

To this may be added a development which poses a problem of penicillin treatment for even the skilled clinician. As readers of THIS JOURNAL know, recent yields of penicillin are a strangely variable mixture of the four known types of the drug. When it became possible to isolate small amounts of penicillins G, F, K and X, tests indicated that K carries only a fraction of the clinical power, unit for unit, possessed by the other chemical types. The erratically shifting composition of commercial penicillin therefore makes clinical results less certain than would ordinarily be expected.

The present situation—now under intensive study by all concerned—has caused particular misgivings in the field of syphilis therapy. A joint statement by the U. S. Public Health Service, Food and Drug Administration and Committee on Medical Research emphasizes that "under no circumstances should penicillin in its presently available form be administered orally for the treatment of syphilis," even by a physician. Unfortunately it is just this type of infection—syphilis or other venereal disease—for which many persons try to obtain penicillin for self-treatment.

Now comes a startling report by Welch and his co-workers in the Scientific Edition of THIS JOURNAL (May, 1946). At certain dosage levels streptomycin was found to "stimulate" the infectivity of pathogens in animals and to increase the fatality rate. As pharmacists and physicians anxiously wait for the significance of this finding to be clarified, preliminary studies seem to show that there may be a similar complicating factor in the use of penicillin. At certain concentration levels it, too, appears to increase, rather than decrease, infectivity of the pathogen.

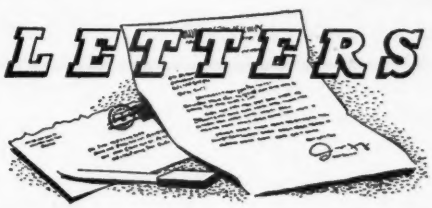
As we learn more about this important drug, we realize more clearly how much remains to be known and why penicillin troches, and other forms, must be administered only under competent medical supervision. Through THIS JOURNAL and other publications pharmacists have been kept fully informed on new developments. They have used this information to play a vital part in making penicillin available to every community and in guiding its proper use against disease.

Unfortunately the few who may dispense penicillin over the counter probably do not bother to read professional publications. Nevertheless every pharmacist, individually and through his local organizations, can help assure that no one violates the law or ethics governing the profession through ignorance of the facts on penicillin or through misrepresentations by supersales representatives.

THEY DON'T LIKE HIM EITHER

Sirs:

Congratulations upon the forward step which you have taken in exposing the unethical practice of one Irving Isadore Jacobs, and my compliments upon the display of courage demonstrated by the printing of such a complete exposé of his methods.



We are all aware that other similar types of operation are still carried on elsewhere in the United States by persons who pose as pharmaceutical educators but who have no recognized status as such. I personally will never feel that the position of pharmaceutical education is secure until all such institutions have been uprooted and "thrown out."

The American Pharmaceutical Association, through its press, is in a position to lend material aid in the discrediting of such enterprises which are a disgrace to the profession of pharmacy and thorns in the sides of all who would strive for the betterment of our educational program.

Buffalo, N. Y. JOSEPH B. SPROWLS

Sirs:

May I have two reprints of the "Teacher of Pharmacy" article? I'm glad someone of influence has taken that *fix*"* for a ride. It's about time.

While operating the "Lincoln-Jefferson University" here, Jacobs "took in" one of my relatives. When she realized her mistake and refused to pay, he threatened to sue but the suit was never filed. She is an elderly woman now, but I want to send her a copy so she may know that finally the A. PH. A. has caught up with him.

Chicago, Ill. J. A. HYNES

Sirs:

Your article on "Teacher of Pharmacy" in the May issue saved me time and money. Many thanks. I was almost ready to bite. . . Please send copies of the story to the Miami Daily News and the Miami Herald which advertised his course.

Miami, Fla. M. C.

NOTES "UNSCIENTIFIC REASONING"

Sirs:

I have been working several years now in various Army hospital pharmacies, where I have had nonskilled civilian and military personnel assigned to me for training. Part of the pharmacist's duty is to see that these assistants compound prescriptions correctly. . . . During my experience I have "caught just in time" drugs being dispensed in dangerous doses by pharmacy technicians. The warning to have nonroutine prescriptions checked by the pharmacist is often unheeded, when the pharmacist may be absent while conferring with medical officers, getting information in the medical library, or otherwise occupied.

. . . The Army's Surgeon General may state that there have been very few accidents or deaths recorded in Army statistics, but does that office have statistics on the number of prescriptions dispensed that have been either injurious or, equally inexcusable, utterly worthless for the purpose intended by the prescriber?

. . . There are no doubt many Army pharmacies that operate without any graduate pharmacist whatsoever. For example, one pharmacy that handles alcohol, morphine, etc., is operated by a girl who only a short time previously was transferred from her regular job as an Air Corps supply clerk. True, the "technician" was directed to dispense only prepared medicinals, but it can be readily seen that under pressure from medical officers and nurses, who are always "in a hurry," that the technician may attempt to compound "simple" prescriptions and eventually try to fill most prescriptions.

It is amazing to note the stand of many medical officers in administrative positions. It is often their opinion that because *most* Army medications are routine and the medical supply catalog is standardized the dispensing called for is routine and therefore can be accomplished by a pharmacy technician. However, they will admit that *all* the required dispensing and compounding is not routine. Whereas scientific methods must rule out all odds, these medical officers deem it unnecessary to rule out further chances of error due to reliance upon those who are not pharmacists to prepare medication. This attitude is certainly contrary to scientific reasoning.

It seems only fair to Army personnel that an effort be made to procure registered pharmacists in Army pharmacies to render the same pharmaceutical service that civilians are assured under state law.

Dayton, O. NORMAN E. KUTLER

COOPERATION OF DENTISTRY AND PHARMACY

Sirs:

It was with a great deal of satisfaction that I learned of the recent decision of the JOURNAL to publish regularly descriptions of accepted products and reports from the Council on Dental Therapeutics of the American Dental Association. . . . I trust that the goal of increased cooperation between pharmacy and dentistry will be realized.

H. BERTON MCCAULEY

Bethesda, Md. Member of the Council

STRAIGHT FROM HEADQUARTERS

by ROBERT P. FISCHELIS, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

THE URGE TO COUNSEL WITH ONE ANOTHER

THE daily papers are full of pessimistic reports about the international situation, and here at home our people seem to be groping for strong leadership to show them the right path to a successful solution of our many problems. Congress is undecided as to just how to handle labor problems, price control, the draft, the development of scientific research, distribution of medical care and the regulation of many other activities affecting the public welfare. It seems as though the rapid relinquishing of controls exercised by the government during the war has not been without serious effect on the general economy. We are a peace-loving people and we have not remained war or internationally minded long enough to see some things through to a final and satisfactory conclusion for the good of our nation and mankind in general.

In all walks of life men are groping for the right solution to controversial and troublesome questions. When this occurs there is always an urge to counsel with one another; to meet and to discuss; to resolve collectively and to act through established organizations or to create new organizations if those in existence will not or cannot function as expected.

The greatest urge for taking counsel is among the nations of the world now seeking to make the United Nations Organization function. What is not yet clear to many people, however, is that functioning through any organization requires considerable subordination of the independent action of individuals or of nations. Until the nations of the world realize, as have the several states within the United States, that the virtues of centralization of authority are purchased at the sacrifice of some individual freedom we cannot expect the full value of organized effort to manifest itself.

As this issue of the JOURNAL goes to press, the United Nations' Economic and Social Council is opening an International Health Conference which has great possibilities and significance for all of us. If the proposed charter of this World Health Organization is approved by the nations now assembled in New York and a permanent international health organization is formed, a brighter day will dawn for the entire international situation, because men and women will unite to work against the spread of disease and the ravages of ill health as they unite to fight other common enemies which threaten their destruction.

Once there is a common objective, such as the improvement of health, intensely sought and effectively pursued by all nations, order will come out of international misunderstandings in many other fields. No pharmacist is too far removed from the health affairs of his community not to have some influence in promoting this common objective. The AMERICAN PHARMACEUTICAL ASSOCIATION, which is represented at the International Health Conference, will make whatever contribution it can to improve the health of our nation and the nations of the world.

AMERICAN PHARMACY'S OPPORTUNITY

Just as there is an urge among the nations and peoples of the world to counsel with one another, there is also an intense desire for members of the professions, vocations and trades to meet and discuss their mutual problems. Perhaps the most important series of meetings scheduled in the near future for American pharmacy are those of the A. PH. A. and related bodies in Pittsburgh.

The American Association of Colleges of Pharmacy will come to grips with some of the most important problems of pharmaceutical education which have ever confronted the pharmaceutical educators of this nation. They must decide what steps are to be taken to coordinate the undergraduate educational program with the changing duties and responsibilities of the pharmacists they are training. They must also determine how they are going to meet the challenge for a high quality of graduate instruction which will produce the leaders in the field of pharmaceutical education, research and administration which are so greatly needed and

which will determine the future of our profession for generations to come. Furthermore, and possibly more important than any of the other problems confronting this group, there is the necessity for determining who shall be permitted to study pharmacy and how those who are to be permitted to do so are to be selected. The right answer to these problems calls for the closest study, the most searching inquiry and complete impartiality in the evaluation and determination of the criteria which shall guide the selection of future members of the profession.

The National Association of Boards of Pharmacy must give careful and serious attention to the effect of legislation proposed in various quarters which may weaken the licensing structure upon which public control of the professional qualifications of pharmacists has been built. Any weakening of this structure will cause damage which may require years for repair and bring untold harm to the public welfare. The entire system of reciprocal licensure is at stake when unanimity of action in determining standards for admission to the profession is impaired. Neither isolationismn or uniformity purchased at the cost of lowered standards is in the public interest at this time.

The American Society of Hospital Pharmacists, the American College of Apothecaries, the Conference of Pharmaceutical Association Secretaries, the American Institute of the History of Pharmacy, and the various fraternities, honor societies and other groups which customarily meet during the A. PH. A. convention week all have their specific problems to discuss.

The problems of the profession as a whole and the formulation of policies covering every phase of pharmacy require the united effort of all the groups which make up the body pharmaceutic. For this purpose the meetings of the AMERICAN PHARMACEUTICAL ASSOCIATION are obviously the common ground for taking counsel, exchanging views and deciding upon policies which are to constitute the guideposts and the platform upon which American pharmacy can stand firmly and unequivocally. These meetings will begin Tuesday afternoon, August 27, and continue until Friday afternoon, August 30. Details of the program are given on page 311.

PHARMACEUTICAL SERVICE FOR VETERANS

AS this issue of the JOURNAL is about to go to press, word comes to us from the Veterans Administration that the original proposal offered to state pharmaceutical associations [see June JOURNAL, p. 245] has been amended in a number of particulars and new agreement forms have been issued from the office of the director for pharmacy service. These forms provide for payment by the Veterans Administration to state pharmaceutical associations of a monthly handling charge equal to 10% of the total amount due for pharmaceutical service rendered by the participating pharmacies during each month. State pharmaceutical associations are thus assured of at least a portion of their clerical and administration expenses for taking care of the billing and payments to individual pharmacies for prescription service rendered.

The response of state pharmaceutical association officers to the opportunity for service on the part of the profession to veterans entitled to medical care at government expense has been very gratifying. We are sure that the government will receive an effective demonstration of the fact that drugs, medicines and medical supplies can be supplied efficiently and economically to its clients by individual pharmacists in private practice.

UNIFORM BARBITURATE REGULATION

SATISFACTORY progress toward formulating a uniform state barbiturate bill can be reported following a recent meeting of the A. PH. A. Committee on Legislation with representatives of the American Medical Association in Washington on June 10. There was definite agreement on the following principles:

1. Federal legislation of the narcotic control type is not called for at this time and every effort should be made to enact state legislation which will be uniform for the 48 states.

2. Barbiturates should be supplied only on prescriptions of medical practitioners and should not be renewed more than twice and not at all after sixty days or if the physician indicates on the original prescription that there shall be no renewal.

3. Possession of barbiturates except pursuant to a prescription or by members of the professions entitled to prescribe or dispense and by manufacturers and wholesalers dealing in these drugs shall be made a misdemeanor punishable by fine or imprisonment, or both.

4. Preparations containing minimum amounts of barbiturates, with other drugs which contribute the principal therapeutic action of the preparation, should be exempt from the regulations if they are products which may be used without medical advice.

With the united effort of the medical and pharmaceutical professions much can be accomplished to control the unfavorable effects of promiscuous sale and distribution of barbiturates.

Ophthalmic

by LOUIS ARRIGONI* and G. A. TOZER**

THE modern practicing ophthalmologist is increasingly demanding that his prescriptions be prepared on a higher scientific plane. His specifications usually require that the solutions be preserved against the growth of microorganisms, isotonic with the lacrimal fluid and buffered to a *p*H level permitting comfort to the patient and maximum therapeutic efficacy of the active principles.

To introduce these refinements into the compounding of ophthalmic solutions requires rather extensive calculations and precise measurements which are not within the limits of practicability for most pharmacists. With this thought in mind the stock formulas for isotonic, buffered and preserved collyria appearing in the subsequent paragraphs were designed to circumvent these difficulties and to allow the pharmacist to prepare the individual solutions with a minimum of effort.

Preservation

To prevent the growth of mold or other microorganisms in these solutions the solutes are dissolved in preserved distilled water, the formula of which is as follows:

Methyl-*p*-hydroxybenzoate....	0.26 Gm.
Propyl-*p*-hydroxybenzoate.....	0.14 Gm.
Distilled water, to make.....1000.0	cc.

The two esters† are dissolved in about 800 cc. of boiling distilled water, the solution cooled and then made up to 1000 cc. with distilled water.

Isotonicity

The quantities of solutes required to render these solutions isotonic with the lacrimal fluid were calculated by Nicola's formula, the only modification being the use of 1.86 for the "dissociation factor" of sodium chloride rather than 1.8.[1] By adopting this value the freezing point of the resulting solutions more nearly approximated the freezing point of the tears (−0.80° C.).

*p*H of the Solutions

The *p*H of these solutions has been adjusted to 6.75 rather than 7.4, the average *p*H of the normal lacrimal fluid, because it has been established that many pathogenic organisms are destroyed by an acid medium.[2] However, the solubility limits imposed by many of the drugs used in ophthalmology, as well as the lower limit of comfort (*p*H 6.5), prevent further reduction of the *p*H of these ophthalmic solutions below the adopted level.

Choice of Buffer Salts

Although a great many buffer salts have been used in ophthalmic solutions, the phosphate salts have been found to be the most generally desirable and adaptable for this purpose. Consequently, two phosphate salts, namely, monobasic potassium phosphate (KH_2PO_4) and dibasic sodium phosphate (Na_2HPO_4), have been used in all of the collyria that follow with the exception of the zinc sulfate solution. In the latter, sodium acetate and boric acid were substituted because of the incompatibility of the phosphate and zinc ions.

Ophthalmic Solution of Zinc Sulfate

The following solution of zinc sulfate is calcucated to contain 0.125% of anhydrous zinc sulfate which corresponds to the very common prescription for 1 gr. of zinc sulfate per fluid ounce of solution.

Sodium acetate ($NaC_2H_3O_2 \cdot 3H_2O$).....	1.1849 Gm.
Boric acid.....	0.1429 Gm.
Potassium chloride.....	1.5369 Gm.
Zinc sulfate ($ZnSO_4 \cdot 7H_2O$)...	0.2226 Gm.
Preserved distilled water, to make.....100.0	cc.

* Assistant Professor of Pharmaceutical Chemistry, College of Pharmacy, University of Washington, Seattle, Washington.
** Rezot Chemical Co., Everett, Washington.

† Both preservatives are necessary since each inhibits certain microorganisms against which the other is not effective. These esters are supplied by such firms as the Goldschmidt Chemical Corp., 153 Waverly Place, New York 14, and the Heyden Chemical Corp., 50 Union Square, New York 3.—THE EDITOR

Solutions

Dissolve the sodium acetate, boric acid and potassium chloride together and the zinc sulfate separately in about 40 cc. of the water, mix the two solutions and make up to 100 cc. with preserved distilled water.

Stock Formulas

The following phosphate-buffered ophthalmic solutions are formulated in such a way that individual solutions of any desired percentage strength of active constituent can be prepared rapidly, efficiently and with a minimum of effort.

This has been accomplished by calculating the quantities of ingredients required to make 100 cc. of solution of the maximum strength ordinarily employed in clinical practice. To dilute a particular solution to any correspondingly lower concentration of active principle, the formula is also given for a diluting solution, which is isotonic with and of the same *p*H (6.75) as the stock concentrated solution. By mixing the proper quantity of the solution containing the prescribed active ingredient with the right amount of diluting solution, the former can be diluted to any desired percentage strength of active ingredient without altering its *p*H or isotonicity.

For example, suppose a prescription for one ounce (30 cc.) of 1% atropine sulfate is received. The pharmacist merely dilutes the stock 4% solution of atropine sulfate in the ratio of 1 to 3 with diluting solution. In other words, he would measure accurately 7.5 cc. of 4% atropine solution and make it up to 30 cc. with diluting solution. The resulting product would be a 1% preserved, isotonic and buffered atropine sulfate solution of *p*H 6.75.

Diluting Solution (pH 6.75)

Monobasic potassium phosphate (KH_2PO_4)*.....	0.4286 Gm.
Dibasic sodium phosphate (Na_2HPO_4)*.....	0.5714 Gm.
Sodium chloride.....	0.8167 Gm.
Potassium chloride.....	0.2143 Gm.
Preserved distilled water, to make.....	100.0 cc.

* Note that the quantity of phosphate specified in the formulas is for the anhydrous salt.

Pilocarpine Nitrate Solution, 2% (pH 6.75)

Pilocarpine nitrate.....	2.0000 Gm.
Monobasic potassium phosphate (KH_2PO_4).....	0.1304 Gm.
Dibasic sodium phosphate (Na_2HPO_4).....	0.8696 Gm.
Sodium chloride.....	0.5348 Gm.
Potassium chloride.....	0.0652 Gm.
Preserved distilled water, to make.....	100.0 cc.

Dionin Solution, 4% (pH 6.75)

Dionin.....	4.0000 Gm.
Monobasic potassium phosphate (KH_2PO_4).....	0.3333 Gm.
Dibasic sodium phosphate (Na_2HPO_4).....	0.6667 Gm.
Sodium chloride.....	0.3494 Gm.
Potassium chloride.....	0.1667 Gm.
Preserved distilled water, to make.....	100.0 cc.

Procaine Hydrochloride Solution, 4% (pH 6.75)

Procaine hydrochloride.....	4.0000 Gm.
Monobasic potassium phosphate (KH_2PO_4).....	0.4118 Gm
Dibasic sodium phosphate (Na_2HPO_4).....	0.5882 Gm.
Sodium chloride.....	0.1288 Gm.
Potassium chloride.....	0.2059 Gm.
Preserved distilled water, to make.....	100.0 cc.

Metycaine Solution, 4% (pH 6.75)

Metycaine.....	4.0000 Gm.
Monobasic potassium phosphate (KH_2PO_4).....	0.4444 Gm.
Dibasic sodium phosphate (Na_2HPO_4).....	0.5556 Gm.
Sodium chloride.....	0.1797 Gm.
Potassium chloride.....	0.2222 Gm.
Preserved distilled water, to make.....	100.0 cc.

Physostigmine Salicylate Solution, 1% (pH 6.75)

Physostigmine	1.0000 Gm.
Monobasic potassium phosphate (KH_2PO_4)	0.4444 Gm.
Dibasic sodium phosphate (Na_2HPO_4)	0.5556 Gm.
Sodium chloride	0.6932 Gm.
Potassium chloride	0.2222 Gm.
Sodium formaldehyde sulfoxylate*	0.0200 Gm.
Preserved distilled water, to make	100.0 cc.

Homatropine Hydrochloride Solution, 4% (pH 6.75)

Homatropine hydrochloride	4.0000 Gm.
Monobasic potassium phosphate (KH_2PO_4)	0.3333 Gm.
Dibasic sodium phosphate (Na_2HPO_4)	0.6667 Gm.
Sodium chloride	0.2329 Gm.
Potassium chloride	0.1667 Gm.
Preserved distilled water, to make	100.0 cc.

Homatropine Hydrobromide Solution, 4% (pH 6.75)

Homatropine hydrobromide	4.0000 Gm.
Monobasic potassium phosphate (KH_2PO_4)	0.4118 Gm.
Dibasic sodium phosphate (Na_2HPO_4)	0.5882 Gm.
Sodium chloride	0.2910 Gm.
Potassium chloride	0.2059 Gm.
Preserved distilled water, to make	100.0 cc.

Atropine Sulfate Solution, 4% (pH 6.75)

Atropine sulfate	4.0000 Gm.
Monobasic potassium phosphate (KH_2PO_4)	0.3940 Gm.
Dibasic sodium phosphate (Na_2HPO_4)	0.6060 Gm.
Sodium chloride	0.5531 Gm.
Potassium chloride	0.1970 Gm.
Preserved distilled water, to make	100.0 cc.

* Reducing agent to inhibit the oxidation of physostigmine salicylate. Supplied by such firms as Rohm and Haas Co., Philadelphia 5, and Jacques Wolf and Co., Passaic, N. J.—THE EDITOR.

Cocaine Hydrochloride Solution, 4% (pH 6.75)

Cocaine hydrochloride	4.0000 Gm.
Monobasic potassium phosphate (KH_2PO_4)	0.4118 Gm.
Dibasic sodium phosphate (Na_2HPO_4)	0.5882 Gm.
Sodium chloride	0.2651 Gm.
Potassium chloride	0.2059 Gm.
Preserved distilled water, to make	100.0 cc.

The above phosphate buffered solutions are best prepared by dissolving the phosphates and chlorides in about 50 cc. of preserved distilled water, the active ingredient in about 25 cc. of preserved distilled water, slowly pouring the latter into the former with constant agitation, and making the final product up to 100 cc. The vessel in which the active ingredient is dissolved should be rinsed several times with small portions of preserved distilled water to insure the complete transfer of the active principle to the graduated container.

The monobasic potassium phosphate used in the above solutions should have a *p*H within the range of 4.4 to 4.7 and the dibasic sodium phosphate a *p*H within the range of 8.7 to 9.5 to obtain a solution having a final *p*H of 6.75.

The quantities of phosphate salts used in the above formulas are based on the anhydrous form of both. The hydrated salts may also be used provided an allowance is made for the water of crystallization in the latter. In other words, if $Na_2HPO_4 \cdot 2H_2O$ is used instead of Na_2HPO_4, the quantity of the latter stated in each of the above formulas must be multiplied by the ratio of the molecular weight of the hydrated form to the molecular weight of the anhydrous form, or 1.2536.

Discussion

Although accuracy is at a premium in the preparation of the above solutions, and the exactness in their duplication is in direct proportion to the diligence with which it is pursued, most pharmacists do not have at their disposal an analytical balance and the volumetric equipment necessary for absolute accuracy. However, a sufficient degree of accuracy may be attained in most cases by making all weighings to the nearest one-hundredth of a gram (0.01 Gm.) on an accurate prescription balance and by making the solutions up to the desired volume in an accurate cylindrical graduate.

To obtain consistently reproducible results it is also necessary to use chemicals of the highest purity obtainable, i.e., those of C.P. or Reagent grade. The stock solutions should be prepared only in such quantities as will be used in a reasonable length of time.*

By the methods described, the pharmacist can dispense isotonic, buffered and preserved ophthalmic solutions. Time-consuming calculations and the extemporaneous preparation of buffer solutions are avoided.

REFERENCES

1. Nicola, F., *Giorn. farm. chem.*, **70**, 57 (1921).
2. Horsford, G. N., and Hicks, A. M., *Arch. Ophthalmol.*, **13**, 14 (1935).

* Because of the possibility of decomposition of the alkaloids during extended storage, it has been found practical and convenient for pharmacies receiving a limited number of prescriptions for ophthalmic solutions to prepare each stock solution exactly as outlined in the formula *except* that the active ingredient is omitted. Then when a prescription for one of the stock solutions is obtained, the prescribed amount of solution without the alkaloid is measured and sufficient active ingredient added to produce the concentration specified in the formula. In the event a lower concentration is prescribed the stock solution may be diluted with the diluting solution in exactly the same manner as described above.

Assume for example, that a prescription calls for one fluid ounce (30 cc.) of 1% atropine sulfate solution. This is one-fourth the concentration of the original formula (4%). The pharmacist therefore measures out 7.25 cc. of "atropine" stock solution (from which the alkaloid has been omitted), adds 0.3 Gm. of atropine sulfate and makes the solution up to 30 cc. with the diluting solution. This solution will then be practically identical with one prepared from the original formula containing the 4% atropine sulfate.

PHARMACISTS GAIN PROMOTION IN U.S. PUBLIC HEALTH SERVICE

Thomas A. Foster, pharmacist and chief of the Purchase and Supply Section of the U.S. Public Health Service, has been commissioned in the Regular Corps in the Full Grade, a rank he previously held in the Reserve Corps. This constitutes an unusual honor, since by law not more than three such appointments from all professions can be made in the Public Health Service without professional examination during a year. The procedure is used only when commissioned officers are not available "for the performance of permanent duties requiring highly specialized training and experience in special fields related to public health."

By examination, two other pharmacists have been promoted to the Full Grade in the Regular Corps, retroactive to July 1, 1944, when the legislation was passed consolidating laws pertaining to the Public Health Service. The pharmacists are R. D. Kinsey of Service Headquarters in Washington; and T. C. Armstrong, administrative officer at the Marine Hospital, Staten Island, N. Y.

Pharmacists Arnold H. Dodge of Seattle, Wash., and Edward Wenschhoff of Mechanicsburg, Pa., were recently commissioned in the Assistant Grade, Reserve, and are now on duty in San Juan, P. R.

NATION-WIDE SURVEY OF PHARMACY INITIATED

REALIZING the increasing significance of the profession of pharmacy in the constantly expanding health program of the country, the American Association of Colleges of Pharmacy has initiated an over-all study of pharmaceutical education with special reference to the modern practices and services required of pharmaceutical graduates. The nation-wide survey will be conducted by the American Council on Education. Funds—approximately $100,000—will be provided through a grant made available by the American Foundation for Pharmaceutical Education.

Plans for the survey include a careful study of the supply and future demand for trained pharmacists; the practices of the colleges of pharmacy as to the admission, guidance, selection, and training of students; analysis of present-day prescriptions to determine the knowledge required of the professionally trained pharmacist; the relation of pharmaceutical education to business and industry; the role of pharmacy in medical care; the qualifications of faculty members and the conditions of faculty service in the colleges of pharmacy; and the relation of the requirements for licenses to the programs of training and practical needs. Special attention will be given to methods and means for the training of the scientific specialist now required by the rapidly growing pharmaceutical industries and for pharmaceutical research.

The projected pharmaceutical survey will be under the direction of Dr. Edward C. Elliott, formerly president of Purdue University, who will be assisted by a technical staff. There will also be appointed an advisory committee representative of educational interests, state licensing boards, the profession and pharmaceutical industries. It is expected that the survey will require from two to three years.

A. PH. A. SECRETARY IS U. S. ADVISER FOR WORLD HEALTH CONFERENCE

WHEN the International Health Conference convened in New York City on June 19 under the auspices of the Economic and Social Council of the United Nations, American pharmacy was represented by the secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Headed by Surgeon General Thomas Parran, the American delegation to the Conference consists of six members, with a staff of advisers. Among the advisers appointed by President Truman are Dr. Robert P. Fischelis, secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION; Dr. George Lull, secretary of the American Medical Association; and Mrs. Elmira B. Wickenden, executive secretary of the National Nursing Council.

The Conference was called, pursuant to a resolution adopted by the United Nations Conference at San Francisco, for the purpose of organizing an international health organization. A Technical Preparatory Committee of experts met earlier this year at Paris to agree upon tentative conclusions as to the general principles which should govern the constitution of the World Health Organization.

Approximately 51 United Nations, 16 non-United Nations and 10 international associations are represented in the Conference which is to be in session for three or four weeks.

As contemplated by the Preparatory Committee, the proposed World Health Organization would be the general directing and coordinating authority in international health work. Its proposed functions would include: promoting research in the health field; stimulating work to eradicate disease; assisting governments to strengthen their national health services and to provide aid in emergencies; and promoting international standards for pharmaceutical, biological, and related products. To facilitate the exchange and diffusion of information it would foster improved standards of education in the health professions, develop central information services with respect to health and medical care, maintain an epidemiological and statistical service, and assist in developing informed public opinion on matters of health. By cooperating with other agencies, it would also promote improvement of nutrition, working conditions, housing and other factors affecting environmental hygiene and sanitation. To facilitate international cooperation it would seek to establish conventions, agreements, and standardized nomenclature and would study administrative and social techniques in the health field.

Through such activities it is expected that the organization will supply the cooperative effort in international health work needed to take full advantage of present knowledge for improving the physical and mental health of the peoples of the world.

In his capacity as adviser to the American delegation, A. PH. A. Secretary Fischelis will be in a position to draw upon a long and extensive experience in public health and pharmaceutical activity as a law enforcement official with more than seven years of membership on the New Jersey Board of Health and eighteen years of administrative duty as secretary and chief chemist of the New Jersey Board of Pharmacy. Likewise his activity as chairman of the Joint Committee of the A. PH. A. and the American Social Hygiene Association in matters of venereal disease control, and as a former member of the research staff of the Committee on the Costs of Medical Care, and his membership in various national and state health conferences and pharmacopœial activities have given him an unusually complete background and experience in health problems such as will confront the International Health Conference in its deliberations.

In a message confirming the appointment of Secretary Fischelis, Assistant Secretary of State Donald Russell said: "The Department is gratified to know that you will serve as an Adviser on the Delegation and is convinced that your interest and experience will strengthen the Delegation's participation in this initial world health conference."

It is fortunate that American pharmacy is in a position to supply the advisory service required by the American delegation to the Conference and that the United States government is availing itself of these services.

As the Conference got under way with participation by health authorities from throughout the world, it seemed evident that an effective basis for international cooperation would be established. Pharmacy's participation, through the appointment of Secretary Fischelis, indicated that the profession will no doubt also have a place in the permanent UN Health Organization.

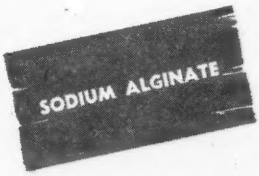
SOME PHARMACEUTICAL NECESSITIES

USEFUL COMPOUNDING AIDS NEWLY ADMITTED TO NATIONAL FORMULARY
THIRD IN A SERIES ON THE EIGHTH REVISION

by MELVIN W. GREEN*

DURING recent years many new emulsifying agents, wetting agents and bodying agents have become available commercially. A tabulation of the most important of these new agents was published in 1942.[1] Pharmacists will be interested in those substances newly admitted to the National Formulary, namely, sodium alginate, dioctyl sodium sulfosuccinate, hydroxystearin sulfate, oleyl alcohol and cetyl alcohol. These substances have properties which will lend themselves to many uses in the dispensing laboratory.

In some instances the literature on their pharmaceutical applications is so extensive that a complete review is impossible. In other cases, the full value of the compounds can only be realized after additional research. Oleyl alcohol, for example, was withdrawn from the market due to wartime conditions soon after its introduction and is now again available for use and further investigation.



SODIUM alginate (algin) is a complex carbohydrate extractive obtained from certain marine algae. In the colloidal sense, it is soluble in hot or cold water, the solutions being highly viscous. These solutions are nearly colorless, odorless and tasteless, and are compatible with such dermatological ingredients as the glycols, glycerin, most wetting agents, and alkalies. The addition of acids thickens algin solutions and, if the acid concentration becomes too high (about *p*H 3 or lower), precipitation of alginic acid occurs.

Although calcium salts in relatively high concentration precipitate the alginate, advantage is taken of this property by adding dilute solutions of calcium citrate to increase the viscosity or even set the algin as a gel. The gels are very stable and do not "bleed." These solutions must be preserved with some agent such as the parahydroxybenzoate esters.

In preparing aqueous solutions of sodium alginate the use of a high-speed stirrer will avoid a tendency to clotting and lumping. If glycerin, propylene glycol or other dispersing agent is first mixed with the algin, dispersion is more easily effected.

Gels of sodium alginate are prepared by dissolving 2 parts of sodium alginate in 90 parts of water containing the preservative. To this add a slurry of 0.3 part of calcium citrate in 8 parts of water. After thorough mixing the gel is aged for several hours until thickening is complete.

The following formulas represent typical uses of sodium alginate:

HAIR POMADE[†]

Sodium alginate	1.3
Glycerin	3
Calcium citrate	0.1
Preservative	0.1
Perfume	0.5
Water	95

HAND LOTION[†]

Glyceryl monostearate	3
Triethanolamine	0.3
Stearic acid	1
Cetyl alcohol	1
Preservative	0.1
Sodium alginate solution (1%)	94.6

MINERAL OIL EMULSION

Mineral oil	50
Acacia	1.25
Sodium alginate	0.5
Vanillin	0.005
Saccharin	0.005
Preservative	0.1
Water	48.14

* American Pharmaceutical Association Laboratory.

† Sodium alginate is available from such firms as the Algin Corporation of America, 24 State St., New York 4, N. Y.; The Beacon Company, 97 Bickford St., Boston 30, Mass.; and the Kelco Company, 31 Nassau St., New York 5, N. Y.—Ed.

LUBRICATING JELLY

Sodium alginate	2.5
Glycerin	15
Sodium borate	1.5
Preservative	0.1
Perfume	0.2
Water	80.7

Sodium alginate acts as a stabilizer in brushless shaving creams where it is said to make the cream spread easier and free it from "razor clog." Added to the extent of 0.2%, it prevents lather shaving creams from stiffening at higher temperatures and, due to its water-holding property, stabilizes the lather and reduces bubble size.[24]

Being reasonably compatible with low acid concentrations, sodium alginate can be used in feminine hygiene gels to change the consistency without materially altering the total solids content.[24]

Sodium alginate can be used in place of tragacanth as a suspending and binding agent in many pharmaceuticals, and such uses have been discussed in a general way by Osborn and DeKay.[2]

In dentistry sodium alginate is used as a thickening agent in dentifrices and as test molds in making dentures. Recently Englehardt[26] developed a liquid dentifrice, for use in the Rochester (N. Y.) State Hospital, which may be prepared as follows:

LIQUID DENTIFRICE

Sodium alginate	8	Gm.
Solution of calcium hydroxide	50	cc.
Distilled water	350	cc.

Allow the sodium alginate to stand overnight with the water and add—

Soluble saccharin	0.5	Gm.
Distilled water	40	cc.

To the combination now add—

Flavor*	16	cc.
Alcohol	200	cc.
Glycerin	80	cc.

After mixing, the combination is mixed and added to—

Sodium lauryl sulfate	40	Gm.
Distilled water	200	cc.

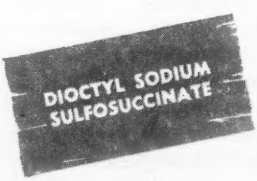
Finally add—

Amaranth solution, 5%	2	cc.
Distilled water, *q.s. ad*	1000	cc.

The product is completely homogenized and dispensed in containers of a convenient size.

* Any flavor may be used, but the following is suggested:

Anise oil	4 cc.
Cassia oil	4 cc.
Caraway oil	8 cc.
Peppermint oil	34 cc.
Methyl Salicylate	50 cc.



DIOCTYL sodium sulfosuccinate†† was introduced commercially as a wetting agent under the name "Aerosol OT." It occurs as a white, waxlike, plastic solid with a characteristic odor suggestive of octyl alcohol. Although very soluble in water, it dissolves very slowly. For this reason, 25% and 10% aqueous solutions are available commercially. It is also soluble in oils, fats, waxes and similar organic substances when heated above 75° C. Its compatibility with electrolytes depends on the nature of the electrolyte and its concentration as indicated by Table I.

A solution of dioctyl sodium sulfosuccinate at a concentration of 0.1% in water brings about maximum reduction of surface tension, from 72 to 28.7 dynes/cm. The presence of small amounts of sodium chloride or sodium sulfate reduces the surface tension still further.

Of even greater significance is the interfacial tension between water phase and such other phases as vegetable oils or liquid petrolatum. The interfacial tension between liquid petrolatum and a 1% dioctyl sodium sulfosuccinate solution is about 1.84 dynes/cm., the exact value depending on the age of the interface. If the surface-active agent is dissolved in water instead of oil, the reduction of the interfacial tension is more rapid.[3] As with surface tension, the interfacial tension is lowered still further by the presence of electrolytes.

TABLE I.—Maximum Concentration of Electrolyte Solution in Which 1% Dioctyl Sodium Sulfosuccinate Is Soluble at 25° C.

NaCl %	NH_4Cl %	$(NH_4)_2HPO_4$ %	$NaNO_3$ %	Na_2SO_4 %	Appearance of Solution
0.5–1*	0.5	2*	0.5	1	Clear
3	2	3	1*	3	Turbid

* Slightly turbid.

†† Dioctyl sodium sulfosuccinate is available as Aerosol OT from the American Cyanamid and Chemical Corporation, 30 Rockefeller Plaza, New York 20, N. Y. This product also may be obtained in small quantities from the R. F. Revson Co., 144 W. 18th St., New York 11, N. Y.—ED.

While strong acids adversely affect the wetting power of dioctyl sodium sulfosuccinate, by a salting-out action as well as hydrolysis of the ester, moderate concentrations of acids are not harmful. Sodium bicarbonate at a concentration of 0.25% will not affect its wetting power after six days at 30° C. Sodium carbonate in a concentration of 0.225% (*p*H 11.1) does not greatly reduce the wetting power during the first four hours at room temperature, but after twenty-two hours the wetting power is less than one-third of the original value. Trisodium phosphate and all stronger alkalies rapidly destroy the wetting power by hydrolysis. Gums, carbohydrates, oils and other protective colloids give varying degrees of protection from this hydrolytic effect.[3]

Dioctyl sodium sulfosuccinate has a fair tolerance for calcium and magnesium ions. The tolerance is dependent upon the concentration of surface-tension depressant and is more reactive in higher concentrations when it peptizes the calcium complex.[3]

The addition of dioctyl sodium sulfosuccinate to other emulsifiers often makes a very effective base for emulsified oils, as for example:

BASE FOR EMULSIFIED OILS

Dioctyl sodium sulfosuccinate	40 Gm.
Oleic acid	42 Gm.
Triethanolamine	18 Gm.

Dissolve the dioctyl sodium sulfosuccinate in the oleic acid by heating to about 60° C. Cool and add the triethanolamine. Five per cent of this emulsifier can be added to 95% oil and this added in turn to 30–50% water to form a primary emulsion capable of considerable dilution.

Benaglia, Robinson, Utley and Cleverdon[4] have studied the chronic toxicity of dioctyl sodium sulfosuccinate in rats, dogs, rabbits and monkeys and found it to be of a very low order.

Gershenfeld and Perlstein[5] made a very interesting study of the effect of dioctyl sodium sulfosuccinate and hydrogen-ion concentration on the bactericidal efficiency of antiseptics. The activity of phenol, mercuric chloride, merthiolate, and hexylresorcinol was enhanced, but Zonite and Zephiran were both found to be incompatible and hence the results were poorer.

GLYCERYL monostearate‡ has proved to be a very useful emulsifier and emulsion adjunct in the technical arts. It is essentially the monoglyceride of stearic acid. Its emulsifying properties are due to the polar nature of the two remaining OH groups of glycerin orienting toward and into the water phase while the hydrocarbon chain of the stearic acid portion is thrust into the fatty phase of the emulsion.

Pure glyceryl monostearate is not water dispersible and is not effective as an emulsifier unless another surface-active agent is present. Consequently, many commercial varieties of glyceryl monostearate are admixed with soaps and other depressants of surface and interfacial tensions and are called "self-emulsifying." The exact natures of many of these self-emulsifying monoglycerides are trade secrets.

Glyceryl monostearate has found considerable application in the cosmetic field,[25] where it is claimed to produce very stable creams which do not crack at freezing temperatures as do ordinary stearate creams. In fact, such creams are much less susceptible to weather conditions than older creams. Many liquid emulsions can be stabilized by about 0.5% of glyceryl monostearate. All preparations containing this emulsifier must be preserved with the esters of *p*-hydroxybenzoic acid or similar agents.

One of the early uses of glyceryl monostearate in pharmaceuticals was that of Sorg and Jones[9] who prepared a base having the following formula:

Glyceryl monostearate	15 Gm.
Cetyl alcohol	15 Gm.
Glycerin	35 Gm.
Diethylene glycol	35 Gm.

This base was studied further by Beeler[7] who claimed that all of the dermatological ingredients made ointments which are washable and of good appearance excepting Whitfield's combination and Burow's solution, which, although washable, developed a grainy appearance. After aging a month, the ointment containing Burow's solution became very stiff and water separated. After a month Peru balsam, phenol, ammoniated mercury, and ichthammol were not very satisfactory. In the opinion of the reviewer this

‡ Glyceryl monostearate is supplied by such firms as Glyco Products Company, Inc., 26 Court St., Brooklyn 2, N. Y.; The Beacon Company, 97 Bickford St., Boston 30, Mass.; and the Goldschmidt Chemical Corporation, 153 Waverly Place, New York 14, N. Y.—ED.

base contains far too much glycol and glycerin to be free from irritating qualities, particularly on the mucous membranes.

In 1945 Fiero and Dutcher[10] made an interesting study of the use of glycol esters in ointment bases. Three types of bases were prepared: non-emulsified, emulsified, and vanishing.

NON-EMULSIFIED OINTMENT BASES

A

Glyceryl monostearate	16.7 Gm.
Hydroxystearin sulfate	33.3 Gm.
Petrolatum	50 Gm.

B

White wax	10 Gm.
Hydrous lanolin	5 Gm.
Glyceryl monostearate	12.5 Gm.
Stearic acid	2 Gm.
Petrolatum	75 Gm.

EMULSIFIED OINTMENT BASES

A

Glyceryl monostearate	10 Gm.
Hydroxystearin sulfate	20 Gm.
Petrolatum	30 Gm.
Distilled water	40 Gm.

B

Glyceryl monostearate	14 Gm.
Petrolatum	6 Gm.
Paraffin	2 Gm.
Liquid petrolatum	30 Gm.
Distilled water	48 Gm.

VANISHING OINTMENT BASES

A

Glyceryl monostearate	12 Gm.
Glycerin	3 Gm.
Spermaceti	3 Gm.
Distilled water	42 Gm.

B

Stearic acid	13 Gm.
Glyceryl monostearate	20 Gm.
Distilled water	67 Gm.

These bases were prepared also by substituting 45 different polyhydric alcohol esters for the glyceryl monostearate, and the authors concluded that the glyceryl monostearate along with 9 other similar esters produced superior bases. These bases were not studied for compatibilities or for physiological effectiveness.

Lesser,[11] in a review of dermatological preparations which may be used in the prevention of industrial dermatities, gave formulas for a number of preparations in which the properties of glyceryl monostearate appear to be desirable. Among these preparations is to be noted especially one by Klauder, Gross and Brown[12] quoted here:

PROTECTIVE CREAM

White wax	5 Gm.
Glyceryl monostearate	12.5 Gm.
Hydrous wood fat	5 Gm.
Sodium silicate, commercial solution	5 Gm.
Diluted ammonium hydroxide solution	0.5 cc.
Petrolatum	72.5 Gm.

An interesting formula for a vanishing cream is the following:[13]

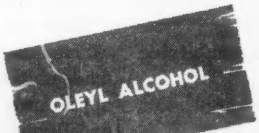
VANISHING CREAM

Glyceryl monostearate, self-emulsifying	150 Gm.
Spermaceti	10 Gm.
Cetyl alcohol	20 Gm.
Glycerin	120 Gm.
Distilled water	699 Gm.
Methyl *p*-hydroxybenzoate	1 Gm.

In a study of bases suitable for sulfonamides, Aldrich and DeKay[14] concluded that the following was the most suitable base studied:

BASE FOR SULFONAMIDES

Glyceryl monostearate	10 Gm.
Liquid petrolatum	5 Gm.
Lanolin	20 Gm.
Water	60 Gm.



OLEYL alcohol* is a mixture of aliphatic alcohols consisting chiefly of $CH_3(CH_2)_7CH=CH(CH_2)_7CH_2OH$. It is practically insoluble in water but is soluble in alcohol and ether and in most organic solvents, vegetable and animal fats, and waxes. Because of its OH group it is sufficiently polar to be oriented toward the aqueous phase in emulsions, while the aliphatic chain remains dissolved in the fat phase. This makes oleyl alcohol a fine emulsifying assistant, although it is not an emulsifier itself. Its bland emolient characteristic should open many possible uses to pharmacy and cosmetology.[8] Advantage is taken of this emollient

* Oleyl alcohol is a product of E. I. Du Pont de Nemours & Co., Inc., Fine Chemicals Div., Wilmington 98, Del. Although oleyl alcohol has been in short supply, small quantities for prescription use can be obtained, when available, through the R. F. Revson Co., 144 W. 18th St., New York 11, N. Y.—ED.

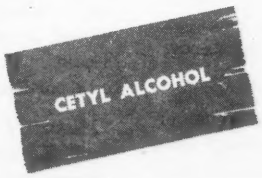
characteristic in the following cold cream formula:[6]

COLD CREAM FORMULA

Oleyl alcohol	8 Gm.
White wax	9 Gm.
Sodium borate	0.2 Gm.
Sodium lauryl sulfate	0.6 Gm.
Cetyl alcohol	8 Gm.
Liquid petrolatum	17 Gm.
Water	57.2 Gm.

Heat the wax, oleyl alcohol, cetyl alcohol and mineral oil on a water bath until homogeneous. Dissolve the sodium borate and sodium lauryl sulfate in the water and warm to 65–70° C. Add the oil phase to the water phase with stirring and continue to stir until cool.

Beeler[7] prepared this cold cream base of Duemling and found the consistency to be especially good, which he attributed to the softening qualities of the oleyl alcohol.



CETYL alcohol** (and its companion, stearyl alcohol) has been used for some time in the cosmetic and pharmaceutical field. Originally it was prepared from spermaceti, but now most of it is made synthetically by the hydrogenation of fats and fatty acid mixtures. It is tasteless, odorless and insoluble in water but soluble in alcohol, glycol ethers, and chloroform. It mixes with both mineral and vegetable fats and oils. It is stable and not subject to bacterial attack.

Although not an emulsifying agent in itself, it is a useful emulsifying adjunct which, according to Kalish,[18] may be effectively used in either water-in-oil or oil-in-water emulsions. The stabilizing effect is due to its hydrating capacity. To illustrate its stabilizing influence in the presence of acid the following acid cream of Kalish[18] is cited:

ACID CREAM

Cetyl alcohol	15 Gm.
Spermaceti	5 Gm.
Sodium lauryl sulfate	2 Gm.
Lactic acid	1.2 cc.
Glycerin	5 Gm.
Water	17.8 Gm.

The usual stearate creams cannot be mixed with acids since these are held together with soaps subject to acid attack. Further, this cream is claimed to be stable to zinc oxide while most stearate creams are not.

Another useful cream has the following formula:

Cetyl alcohol	15 Gm.
Powdered neutral soap	4 Gm.
Glycerin	5 Gm.
Water	76 Gm.

This cream is sufficiently stable that it can be diluted with considerable quantities of mineral oil.

That cetyl alcohol is usable with tragacanth is shown by the following formula:

Cetyl alcohol	3 Gm.
Stearic acid	1 Gm.
Tragacanth	0.4 Gm.
Alcohol	1 cc.
Water	94.6 Gm.

Moisten the tragacanth with the alcohol and stir in about half of the water and heat to about 65° C. Melt the stearic acid and cetyl alcohol together, pour into the aqueous tragacanth with vigorous stirring and homogenize. Finally add the remainder of the water and mix well. The result is a lotion of such quality that it may be used as a powder base.

Kalish[19] has developed a formula for a cleansing cream as follows:

CLEANSING CREAM

Cetyl alcohol	5 Gm.
Petrolatum	20 Gm.
Paraffin	5 Gm.
Mineral oil	45 Gm.
Water	25 Gm.

While petrolatum will take up about 9 to 15% of its weight in water, when mixed with about 4% cetyl alcohol, the mixture can hold 39 to 52% water. The addition of about 1% cetyl alcohol to hydrogenated peanut oil nearly doubles its water holding capacity.

In the review by Beeler[7], seven bases utilizing cetyl alcohol are mentioned. As a result of his

** Cetyl alcohol is available from such firms as Givaudan-Delawanna, Inc., 330 W. 42nd St., New York 18, N. Y., and E. I. Du Pont de Nemours & Co., Inc., Fine Chemicals Div., Wilmington 98, Del.—ED.

work, Beeler concluded that the following base was the most adaptable:

BEELER BASE NUMBER 8

Cetyl alcohol	15	Gm.
White wax	1	Gm.
Sodium lauryl sulfate	2	Gm.
Propylene glycol	10	Gm.
Water	72	Gm

Melt the cetyl alcohol and wax, add the propylene glycol and heat to about 65° C. Dissolve the sodium lauryl sulfate in the water heated to about 65° C. Add the oil phase to the water phase slowly and with constant but gentle stirring, and continue to stir until an ointment-like consistency results.

This base was studied with about 50 commonly used dermatological ingredients and found to be compatible with most. Although some ingredients, like menthol, softened the base and others hardened it slightly, the only cases of frank separation were 70% cod liver oil and 1% acriflavine. It is remarkable that lead acetate T.S. and Burow's Solution did not invert the emulsion. The base has an apparent *p*H approximating 7 and is stable from 0° to 50° C. Autoclaving at 15 lbs. pressure causes separation of the waxes.

About two years later, Green[20] reported on the effect of shelf aging of the ointments prepared by Beeler. In general the consistency was fair with a tendency toward crumbling due to loss of moisture. In no case did phase reversal take place. In some cases, active constituents partially crystallized out, a very undesirable quality. It was also pointed out by Green that probably this base should be used with considerable caution on mucous surfaces, especially the urethra and the conjunctiva.

Johnston and Lee[21] made a novel approach to the general problem of absorption from ointment bases of various types by using radioactive sodium chloride as a tracer substance. The urine of subjects treated with ointments of active sodium chloride was tested for radioactive density by the use of a Geiger counter. Although anhydrous lanolin showed the most consistent result, the Beeler base was highly effective in permitting penetration of the sodium chloride.

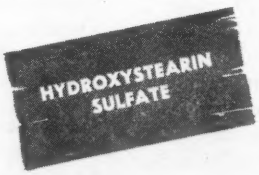
Maren and Edwards[22] found that cetyl alcohol was an excellent dispersing agent for mercury. They studied several ointments of mercury and calomel as prophylactic agents against venereal diseases. The following ointment was considered to be particularly effective:

Mixture I (70% cetyl alcohol; 30% mercury)	10	Gm.
Sodium lauryl sulfate	0.5	Gm.
Dioctyl sodium sulfosuccinate	2	Gm.
Glycerin	5	Gm.
Water	82.5	Gm.

This preparation was shown to penetrate the skin of rabbits better than similar preparations containing calomel. It was shown also to penetrate the mucosa of the penis of male guinea pigs very efficiently.

A perusal of the literature will disclose many more formulas using cetyl alcohol in dermatological preparations and no doubt many pharmacists will be encouraged to develop preparations of their own.

In 1943 Abbott and Allport[23] found cetyl alcohol to be useful in making enteric pill coatings. They recommended 10% shellac and 10% cetyl alcohol in acetone.



HYDROXYSTEARIN§ sulfate is prepared by the sulfation of hydrogenated castor oil and is often called sulfated (or incorrectly sulfonated) hydrogenated castor oil, SHCO. Castor oil, after hydrogenation to an iodine value of less than 5, is reacted with sulfuric acid whereby the OH group on the ricinoleic acid is sulfated.

The pharmaceutical applications of hydroxystearin sulfate have been reviewed in two papers by Fiero.[15,16]

Used alone, hydroxystearin sulfate has a sticky quality which Fiero believes to be desirable since it promotes adhesion to the skin. Although adhesive, it can be removed with water readily. If this sticky quality is undesirable a smooth ointment can be prepared by the addition of about 25% petrolatum. A base containing 33% hydroxystearin sulfate, 50% petrolatum and 17% glyceryl monostearate was found to be an effective hydrophilic base.

Fiero[15] prepared all of the official ointments with hydroxystearin sulfate alone, mixtures of

§ Hydroxystearin sulfate, commonly called sulfated hydrogenated castor oil, is supplied by National Oil Products Co., Langdon and Potter Sts., Harrison, N. J.—ED.

hydroxystearin sulfate and petrolatum, and the above-mentioned hydrophilic base, as bases, and studied the resulting compatibility. At times the ointment is not sufficiently stiff for some climates, but the addition of wax will remedy this. Usually the ointments are easier to prepare using hydroxystearin sulfate than using the official base.

In addition, Fiero showed that hydroxystearin sulfate is useful in overcoming incompatibilities, such as those of Peru balsam and coal tar with petrolatum and lard. Previous admixture of the balsam or tar with hydroxystearin sulfate permits smooth admixture with petrolatum, lard or lanolin.

In a study of several surface-active agents as ointment bases, Dodd, Hartmann and Ward[17] claim hydroxystearin sulfate acts as a primary irritant to human skin. No data as to the *p*H and free acid were given for their sample of hydroxystearin sulfate, but nevertheless caution in its use would seem to be essential. Certainly, all ointments formed on the emulsion principle should be tested for irritation and sensitization before use, since such bases often increase penetration considerably.

Previous papers in this series on products newly admitted to the National Formulary have appeared as follows: Antiseptic Mercury Compounds, March, 1946, p. 132; Acetarsone, Carbarsone and Iodochlorohydroxyquinoline, April, 1946, p. 150. See also, Iron Salts, February, 1946, p. 56; Sun Tan Ointment, July, 1945, p. 181.

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SCOPE OF STREPOMYCIN STUDIES

Clinical investigations of streptomycin currently include the following diseases:

1. Gram-negative bacillary infections of the genito-urinary tract resistant to the sulfonamides.
2. Gram-negative bacillary infections with bacteremia.
3. Hemophilus influenzae infections, including meningitis, pneumonia, middle ear disease and laryngotracheitis.
4. Friedlander's bacillus (*Klebsiella pneumoniae*) pneumonia.
5. Typhoid.
6. Salmonella infections (paratyphoid).
7. Acute brucellosis with bacteremia.
8. Tularemia.
9. Bacterial endocarditis due to gram negative bacilli.

In announcing the present scope of the studies, Dr. Chester S. Keefer, chairman of N. R. C.'s Committee on Chemotherapeutics and other Agents, pointed out that all physicians included in the research program must first submit full information on the bacteriologic diagnosis of each case. When streptomycin is allotted it is with the understanding that a full report of the case will be returned for analysis, together with any of the drug that is not used. Supplies of streptomycin are increasing, and it is expected that limited commercial distribution to depot hospitals may be possible in August.

Diseases that are not being investigated by the Committee at the present time are chronic idiopathic ulcerative colitis, lupus erythematosis acutus disseminatus, leukemia, cancer, fever of unknown cause, rheumatic fever, and rheumatoid arthritis. Only cases of tuberculosis already under treatment prior to March 1, 1946, are being studied, but a broader program of investigation will be undertaken when supplies of streptomycin are available.

PEACETIME IMPLICATIONS OF *Biological Warfare*

by GEORGE W. MERCK

SPECIAL CONSULTANT TO THE SECRETARY OF WAR ON BIOLOGICAL WARFARE

STUDIES OF DISEASE-PRODUCING AGENTS AS A MILITARY WEAPON YIELD KNOWLEDGE WHICH WILL BE USEFUL IN MEDICAL SCIENCE

BIOLOGICAL warfare no longer can be regarded as a laboratory experiment. It has advanced far beyond the laboratory stage, and its possibilities have been sufficiently explored to permit its serious consideration as a very real type of warfare. It is something which, first of all, must be given adequate attention in any comprehensive defense plan and the art of its use developed as a "threat in being" of equal importance to our potentialities in gas warfare.

Biological warfare is not new. It was known in World War I, although employed only on a very limited scale. There is clear evidence that in 1915 German agents inoculated horses and cattle shipped from the United States to the Allies with disease-producing bacteria. It might have been employed in World War II, for it offered an open avenue of attack upon us. That it wasn't developed and used by our enemies was due not merely to their inadequacies but assuredly to a conviction on their part that our potentialities in terms of scientific prowess and productive capacity were far greater than theirs.

Biological warfare may be defined as the use and the defense against the use of bacteria, fungi, viruses, rickettsias and toxic agents derived from living organisms (as distinguished from synthetic chemicals used as gases or poisons) to produce death or disease in men, animals or plants. It may be directed against military or naval forces, civilian populations, livestock or crops. Employed against personnel, it may cause fatalities, or only incapacitate; the duration of illness may be brief or protracted; the causative agents used may be persistent or nonpersistent; they may spread readily from infected to healthy persons, or they may be of a type which produces noncontagious disease.

In the years between World War I and II, an interest in biological warfare was maintained by scientists and military men in many countries. In several of these countries this type of warfare was believed to be possible or even probable.

In the fall of 1941, opinion in the United States regarding investigation of the possibilities of biological warfare was by no means united. After counseling with scientists, Secretary of War Stimson requested the National Academy of Sciences and National Research Council to explore the problem. After an intensive study by a special committee of biological scientists, the N.A.S. and N.R.C. reported to the Secretary of War that biological warfare appeared distinctly feasible, and urged that appropriate steps be taken for defense of the nation against its use.

The advice given to the Secretary of War, coupled with reports of enemy activities in this field, prompted the President to direct the initiation of intensive, large-scale investigation in the United States of the possibilities and potentialities of biological warfare, and the establishment of active collaboration in this field with our British and Canadian Allies.

Our investigations were carried on by a combined organization in which the Army, Navy

Condensed from an address by the president of Merck & Co. at the Westinghouse Centennial Forum in Pittsburgh, 1946.

and civilian scientists (in and out of uniform) universities, private research institutions, industries, and several departments of the government—chief among them the U. S. Public Health Service and the Department of Agriculture both in the fields of animals and plants. All worked together with Allied teams in a most effective manner.

Starting as a project under the most extreme secrecy, the work was undertaken under the wing (and cloak) of the Federal Security Agency. Emerging from this "cover" (but not from secrecy) the Army, with the Navy collaborating, took over. Unique facilities were built by the Chemical Warfare Service and by the Navy for experimentation on pathogenic agents.

While the main objective in all these endeavors was to develop methods for defending ourselves against possible enemy use of biological warfare, it was necessary to investigate offensive possibilities to learn what measures could be used for defense. The achievements were numerous.

General Accomplishments

In general terms, the following were some of the chief accomplishments:

1. The development of methods and facilities for the mass production of pathogenic microorganisms and their products.

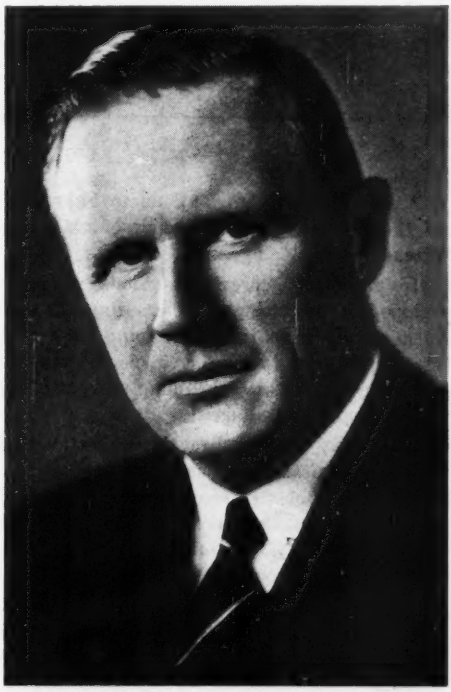
First, the microorganisms selected for exhaustive investigation were made as virulent as possible, produced in specially developed culture media under optimum conditions for growth and maintenance of virulence, and tested for disease-producing power on animals or plants. In this work it was necessary to determine how well various organisms of high disease-producing power could retain their virulence, and how long they would remain alive under different conditions of storage. At the same time it was necessary to discover and develop biological, physical, and chemical means for protection of personnel, animals and plants against these organisms. This work involved exact determination of the numbers of microorganisms required to produce infection, and a thorough study of all possible means of dissemination and routes of entrance into the susceptible individual. New methods had to be developed to prevent contamination of the laboratories and pilot plants in which this work was being done.

Among others, one problem, new to large-scale production of pathogenic microorganisms, involved the prevention of contamination of air, water and land surrounding the experimental stations. That the procedures developed were effective is proved by the fact that no accidental infection occurred outside the boundaries of the experimental areas.

2. The second accomplishment was the development of methods for the rapid and accurate detection of minute quantities of disease-producing agents.

If any system of defense against biological warfare is to function, there must be rapid and accurate detection of any pathogenic agent which might be employed. The methods of chemistry and microbiology available for work of this type in 1942 were entirely inadequate.

Much progress was made in developing procedures for this purpose which were highly sensitive and selective. These will be of value in peacetime work in laboratories, hospitals, and industries.



GEORGE W. MERCK, president of Merck & Co. and life member of A. Ph. A., played an important part in the investigative program on biological warfare.

BIOLOGICAL WEAPONS READY

In the accompanying paper George A. Merck discusses important developments in the nation's wartime endeavor to secure its defenses against biological warfare, and points out how many of the discoveries can be turned to benefit mankind.

That the U. S. also holds the secrets of offensive biological warfare was confirmed late in May by Congressmen who had attended a supposedly closed session of the House Appropriations Committee, where the subject was discussed by Navy representatives. Photographs on these pages were taken in one of the laboratories where the Navy portion of the research was conducted.

Startled by the potentialities of infectious agents and toxins for wholesale destruction of life and crops, Congressmen called the new weapon more deadly than the atomic bomb. Agreeing with this view, the chairman of the Federation of American Scientists declared that "if the average man the world over knew what scientists know about the possibilities of future wars, they would demand of their leaders that they forever put an end to war.... The human race as we know it faces certain death if the insane game of power politics continues."

3. Significant contributions to knowledge of the properties and behavior of air-borne, disease-producing agents.

In this work, precise methods were developed for producing and measuring "clouds" of microorganisms for determining the viability of the organisms in such clouds, and for studying the factors controlling movements of air-borne pathogenic agents.

It is easy to visualize the importance of these categories of achievements when one considers the problems in ventilation brought by modern problems of war: increase in size and underwater range of submersible craft; ventilation of bomb-proof shelters, hospitals and factories.

4. For the first time, a pure, crystalline, bacterial toxin was isolated and carefully studied.

This was the toxin of *Clostridium botulinum*, type A, which is the most potent biological poison known to man. Knowledge gained in this work will open the way for the isolation and purification of other bacterial toxins, and will undoubtedly make possible the preparation of more effective substances which can be used for the immunization of men and of animals against such toxins.

5. The development of vaccines for the protection of chickens against two highly fatal diseases known as Newcastle disease and fowl plague.

This work was performed by civilian scientists who worked in laboratories established in one of the buildings of the Harvard Medical School under the supervision of the American members of the joint U. S.-Canadian Commision which had charge of the rinderpest investigations.

6. Advances in the treatment of certain infectious diseases of mammals, including man.

Although extreme care was taken to protect personnel against infection, a few cases of disease attributable to laboratory accidents occurred. All of these were treated successfully, and the knowledge gained from the treatment of these cases will be of value to the medical profession.*

7. The seventh group of accomplishments was the development and large-scale testing of a vaccine for the protection of cattle against rinderpest, a highly fatal disease of cattle which might have been introduced into this country by accident or by enemy action.

This work was done by a joint United States-Canadian Commission. This project will be discussed in greater detail later in the discussion.

8. Extensive studies on the production and control of diseases which might affect crops of economic importance.

In this work, fungous, bacterial and virus diseases of various crop plants were studied intensively.

9. Information was obtained regarding the effect of more than 1000 different chemical agents on living plants.

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* I would like at this point to pay a tribute to the men and women, the officers of the U. S. Army and the U. S. Navy and their civilian associates; the soldiers, the sailors, the WACS, and the WAVES, who month after month subjected themselves to the risks and dangers of the work in which they were engaged. They are among the unsung heroes of the war.

I have seen experienced physicians and bacteriologists visiting the experiment station stand aghast when they realized what was going on about them.

Nor should the achievement of those responsible for the direction, design and planning of the specialized operations which resulted in such a high safety record go unnoted. Only a few, because of special circumstances, have been given public recognition. I hope as secrecy is lifted and the nature of the achievements of this group is revealed, that some kind of unit citation some day will be awarded these men and women who demonstrated courage and patriotism of the highest order.

This is a particularly fertile field and one that promises much to agriculture in the sectors of weed killers and selective plant control agents. The work was initiated to find destructive agents against various crops and was successful. Only the rapid ending of the war prevented field trials in an active theater of synthetic agents which would, without injury to human or animal life, affect the growing crops and make them useless.

Applications of certain of these agents, even in infinitesimal dilution, had shown that they were capable of depriving the enemy of the benefits of his own labor by depriving his garden and field crops of their fruits. Not until he had carried through the labors of cultivation would he find that the roots had grown sere and that the plant must wither away without yield.

Other Specific Results on Plant Growth Regulating Substances

Many of the detailed results of the research performed are now in process of publication in scientific journals which represent every phase of biological science. These papers will serve as concrete evidence of the job which was done—and as the work continues more will appear.

Results and findings to be reported on among others—

1. The synthesis and testing of about 1100 new compounds, of which a number were found to be effective in various degrees and ways.

2. New formulations and methods of application for greater effectiveness.

3. New knowledge concerning the relative sensitivity of various species and varieties of important plants. Especially valuable were the findings correlating cultural conditions under which crops are grown, types of soil on which produced, and other environmental factors, with the effectiveness of growth regulators.

4. Effects of these compounds in and upon soil fauna and flora.

5. The persistence of these chemicals in soils of various types, and their subsequent effect on crops produced on treated soils.

6. Correlation of effectiveness and time of application, with climatic conditions before and after application, such as sunshine, humidity and rain.

7. Relation of droplet size and distribution to effectiveness when used as sprays.

8. Comparative effectiveness of water, oil or other substances used as dispersion media in sprays.

U. S. Navy Photo

FULLY PROTECTED, this worker (above) at a Navy research unit on biological warfare prepares to go about his duties in a grotesque rubberized suit.

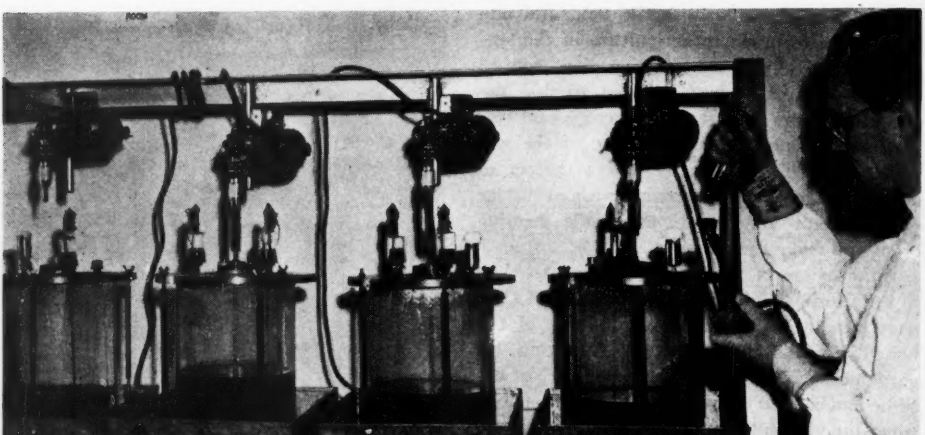
9. Comparative effectiveness of sprays, dusts, vapors and aerosols under different environmental conditions and various stages of growth of plants.

10. Value of some compounds for destruction of certain parts of a plant without injury to other parts. Example: destruction of mature tops of potato plants without injury to tubers, to aid in ripening and harvesting.

11. The setting and development of various fruits without pollination or seeds.

Peacetime Implications

The scientists in charge of this work are leaders in their fields, as were all the scientists in charge of the various projects. They have stated that eventually any living plant process may be brought under control through critical



U. S. Navy Photo

EXPERIMENTAL APPARATUS to devise means for mass culture of infectious organisms is shown in the photograph above.

use of some growth-regulating substance. This means that every agricultural or horticultural practice, which affects growth, development, ripening or storage, can be influenced to economic advantage.

The pattern of the plant projects is no different from the general form of the entire biological warfare program or its other divisions, the animal and the human. It is obvious in all of them that there cannot help but be important advances in knowledge, many of them fundamental, and gains in scientific achievement, many of them capable of practical application. In fact, it is quite impossible for work to be done in this field without such results. It is inherent in the nature of the work. Perhaps no other type of warfare can bring with it such a guarantee of good—economic advantages in agriculture, parallel gains in animal husbandry and, above all, vital contributions to the fight against human ills and suffering.

Prediction of the results of scientific inquiry is not easy; neither is it safe. There are too many "ifs." But most of these "ifs" grow out of the almost universal practice of research workers to indulge in what Horace Walpole called "serendipity." You perhaps recall the story of the three princes of Serendip (Ancient Kingdom of Ceylon) who, faring forth on an errand, returned not with what they sought but always found and brought back something of greater value. Hence—"serendipity." It means the making of unexpected discoveries by chance and by acute observation along the road toward some main objective.

Pasteur stated the same idea in a different way when he said: ". . . it is characteristic of science and of progress that they continually open new fields to our vision," and that "in scientific investigation, chance favors the trained mind."

Rinderpest Project

I can best illustrate some of the potentialities of research in this field by recounting briefly the accomplishments of the American-Canadian team which worked during the war to develop defenses against rinderpest of cattle. It is quite apparent that the value of this project in peacetime will be as great as, if not greater than, its value in meeting the wartime emergency.

In 1941, when considering the diseases of livestock which might be introduced on this continent, either through accident attributable to rapid air traffic or by deliberate enemy action during the war, rinderpest, an exceedingly contagious malady of cattle with a very high mortality rate, stood out as one disease against which every possible precaution should be taken. With a 100% susceptible cattle popu-

lation of many millions on the North American continent, it would have been catastrophic to our food supplies had this rapidly spreading virus disease appeared. In the Orient and other places where this disease occurs it has always been a plague of the first magnitude.

Our Canadian Allies had arrived at the same conclusions as our own with regard to rinderpest, and were in full agreement with use regarding the importance of promptly undertaking measures to place us in the best position possible to defend our vast and critically essential cattle population against this possible threat.

Therefore, it was decided to make the undertaking a joint one. Accordingly, a joint United States-Canadian Commission, consisting of four members appointed by the Secretary of War of the United States, and four by the Canadian Minister of National Defense, was constituted for the purpose of planning and supervising the project.

A suitable, isolated location, an island in Canada, was agreed upon as the place to carry on the work. A highly qualified project director was obtained, and proficient United States and Canadian scientists and technicians were assembled to accomplish the mission, which was of a twofold character. In the first place, it called for the prompt development of ways and means for the safe production and stocking of a type of rinderpest vaccine which it was known could be produced, and which some years previously had been successfully used in eradicating the disease from the Philippine Islands.

This type of vaccine, however, had to be made from the tissues of calves or adult cattle artificially infected with the disease and destroyed at its height to provide the necessary virus-containing tissue. Vaccine of this type, besides being expensive, presented a number of technical difficulties when the necessity of possible production on a vast scale was contemplated. It was realized that if huge quantities of such vaccine had to be produced it would involve the procurement and handling of thousands of cattle, and the proper disposition of their carcasses after collection of the virus-containing tissues used in the production of vaccine. Thus, while under the circumstances it was considered necessary to provide for the production of this type of vaccine, irrespective of difficulties, it was likewise highly important to initiate research studies to determine whether an effective vaccine could be produced without having to utilize cattle as the source of virus. This latter constituted the second phase of the mission.

In the light of knowledge developed in recent years with regard to the cultivation of filtrable virus in developing chick embryos, studies were inaugurated for the purpose of determining whether the virus of rinderpest could be cultivated by such a procedure. After a number of attempts, success was attained in establishing the virus in developing chick embryos. However, difficulty was encountered in propagating the virus in high concentration by this method. As a result, vaccines prepared from chick embryo propagated virus, inactivated by chemical means, were found to have little or no potency.

Later, however, it was discovered that after the bovine rinderpest virus had been successively passed through some 50 developing chick embryos it had become avianized to the point where it would not produce appreciable disease in cattle. As a matter of fact, only

EXPERIMENTAL ANIMALS in the tubes (right) are exposed to airborne infection when placed in a modified Reyniers apparatus, bacteria-tight cylinder into which both food and air may be admitted. The photograph was taken at Naval Medical Research Unit No. 1, University of California, during studies on defense against biological warfare.

very minor reactions were found to follow its injection into susceptible animals. On the other hand, cattle receiving injections of this avianized virus were subsequently found to be substantially immune when exposed to the fully virulent bovine virus. The new vaccine has been subjected to a wholly successful field test in Africa through the cooperation of our British Allies.

These findings immediately pointed the way to the means for providing protection for millions of our cattle with a vaccine which could be produced in huge quantities without the many difficulties involved in producing the bovine tissue type of vaccine. Thus, had rinderpest unfortunately made its appearance on this continent during the war, we would have been prepared to cope with it in a manner heretofore impossible. Aside from the insurance provided by the rinderpest investigations and results during the war period, the findings and knowledge gained from this work will be of great postwar value.

Now a method for the economical production of an effective type of rinderpest vaccine is available for use in countries and localities where the disease has been a crippling plague of livestock. In this connection arrangements have already been made whereby surplus vaccine produced through the operation of the project in Canada will be made available to UNRRA for use in China, where rinderpest is today a disease of great importance.

Further, in carrying out the rinderpest project, a number of findings and observations with regard to the disease and its epizoology resulted. These will constitute valuable additions to the over-all knowledge of rinderpest. In addition, some of these findings will undoubtedly have a bearing on virus diseases other than rinderpest.

Conclusion

My purpose in referring to the work and achievements of this particular project is to illustrate the peacetime implications of the entire program. The work resulted in building up an adequate defense. It has made that particular agent impotent as a weapon in biological warfare. (One might give a thought to this paradox: While we perfect a biological weapon, we perfect the defense against it, thereby destroying the weapon. Would that all weapons of war could be liquidated from the earth as simply as this.)

Research in biological warfare gives a firm promise of worldwide control of many diseases afflicting man and beast and plant life.

These investigations and the revelation of their inherent quality of producing not only weapons and defenses but also fundamental advances of knowledge and practical contributions to medicine and agronomy, have necessitated the writing of a new chapter in biological science. There is still much to be done. Let me leave these thoughts with you:

Those responsible for our defenses and preparedness in this upset world are alert and have their programs ready. But they need support—support from scientists, academic and industrial, which should be given generously and in full measure—and it should not wait for an emergency call of patriotism.

There must be support from the people through Congress and its proper committees. That means money for research. If anything is sure about such an investment, it is that it will pay large dividends—dividends for the nation's health and for the country's economy.

Above all, there should be careful and serious consideration of the subject in whatever deliberations take place concerning the implementation of a lasting peace in the world. The potentialities of this type of warfare cannot be ignored. This is the most important peacetime implication of biological warfare.

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REGULATIONS ARE VIOLATED BY PREPARING PENICILLIN Rx PRODUCTS IN ADVANCE—FDA

Some pharmacists have prepared and stored penicillin products, which are promoted to physicians for use on prescription. Food and Drug Administration officials hold the opinion that this practice violates regulations governing manufacture of penicillin products. Compounding penicillin for prescription use at a later date constitutes manufacturing, according to FDA, and therefore requires the same certification of each lot as required of commercial manufacturers by law.

Under the regulations the seal on a vial of penicillin may be broken only after a prescription for a dosage form has been received. The practical objection to making up a preparation in advance is the instability of penicillin, particularly in the presence of water. There is no objection to advance compounding of bases, into which the penicillin is incorporated when a prescription has been issued.

A. PH. A. CONVENTION HIGHLIGHTS

MEETINGS of the AMERICAN PHARMACEUTICAL ASSOCIATION at Pittsburgh will occupy the better part of four days: Tuesday, Wednesday, Thursday and Friday, August 27 to 30, inclusive. There will be the customary three general sessions. The first of these will immediately follow the annual dinner on Tuesday evening, August 27th. Its principal feature will be President George A. Moulton's message.

The Second General Session will be held on Thursday evening, August 29 and will feature a panel discussion on "Trends in Medication," in which short papers will be presented by three eminent authorities, to be followed by a general discussion with questions invited from the floor. The speakers and their titles will be:

Austin Smith, M. D., Secretary of the Council on Pharmacy and Chemistry of the A. M. A.: "Trends in Therapeutics with Special Reference to New and Nonofficial Remedies."

E. Fullerton Cook, P. D., Chairman of the U. S. P. Revision Committee: "The U. S. P. XIII."

Justin L. Powers, Ph. D., Chairman of the National Formulary Revision Committee: "The N. F. VIII."

In view of the recent publication of N. N. R. 1946 and the imminent publication of U. S. P. XIII and N. F. VIII, this will be a most timely and informative discussion.

Another highlight at this session will be an address by Dr. E. C. Elliott, president emeritus of Purdue University and director of the recently inaugurated survey of pharmacy who will speak on the scope and procedure of the survey.

A third significant contribution to the program will be a brief address on "Pharmaceutical Service to Veterans" by W. Paul Briggs, director of pharmacy service in the Veterans Administration, to be supplemented by later discussion of the subject in the House of Delegates.

The final General Session will be held on Friday, August 30 at 2 p. m. At this session the address of President-elect E. R. Serles will be received, new officers will be installed and resolutions will be finally adopted.

House of Delegates

There will be four sessions of the House of Delegates at which the representatives of state pharmaceutical associations, Local Branches of the A. PH. A. and delegates from affiliated organizations will receive the reports of officers of the AMERICAN PHARMACEUTICAL ASSOCIATION and the various committees and act upon their recommendations. It is expected that the debate on some of the most vital problems affecting the profession will take place in these meetings and, of course, the policies to be adopted will reach their final form as resolutions approved at these sessions.

Among the problems scheduled for major attention at these sessions will be the adoption of a uniform state barbiturate bill for use in the legislative programs of the respective state pharmaceutical and medical associations. Of equal importance will be the consideration of the provisions of the Federal Food, Drug and Cos-

Hotel Reservation Form, 1946 Convention

AMERICAN PHARMACEUTICAL ASSOCIATION

August 25-30, Hotel William Penn, Pittsburgh

—Tear Out This Page and Mail at Once—

The following hotels have rooms available at the rates indicated. NO RESERVATIONS WILL BE ACCEPTED DIRECTLY BY HOTELS. Make your reservations through Mrs. Emily Cullison, Pittsburgh Convention Bureau, Inc., Chamber of Commerce Building, Pittsburgh 19, Pennsylvania.

HOTEL	*SINGLE†*	*DOUBLE*	*TWIN BEDS*
William Penn	$3.85 to $7.70	$5.50 to $8.80	$6.60 to $11.00
Fort Pitt	$1.75 to $3.50	$3.00 to $5.00	$6.00
Henry	$3.00 to $3.50	$5.00	$5.50 to $6.00
Keystone	$3.00 to $3.85	$4.00 to $5.00	$5.00 to $6.00
Pittsburgher	$3.30 to $4.40	$5.00 to $6.50	$6.00 to $6.50
Roosevelt	$3.30 to $5.00	$5.50 to $7.50	$6.00 to $7.50
Schenley			$6.00 to $9.00
Webster Hall	$3.00 to $4.00	$5.50 to $6.00	$5.50 to $7.00

† Very scarce; please arrange for double occupancy.

Please make hotel reservation(s) as indicated below:

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.....Room(s) with double bed(s).....at $.....to $.....per day for.....person(s)

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‡ Very scarce; please arrange for double occupancy.

* A. Ph. A. Headquarters will work with Convention Bureau in doubling up occupants of twin-bed rooms; please suggest associates or committee members who could share room with you.

Arriving: .....; hour**.....a. m. .....p. m.

Leaving: .....; hour.....a. m. .....p. m.

** By indicating arrival after 6:00 p. m. you are guaranteeing the use of the room assigned to you for that night and will be billed for same by the hotel at which reservation is made.

Please print (or type) the names and addresses of all occupants including person making reservations:

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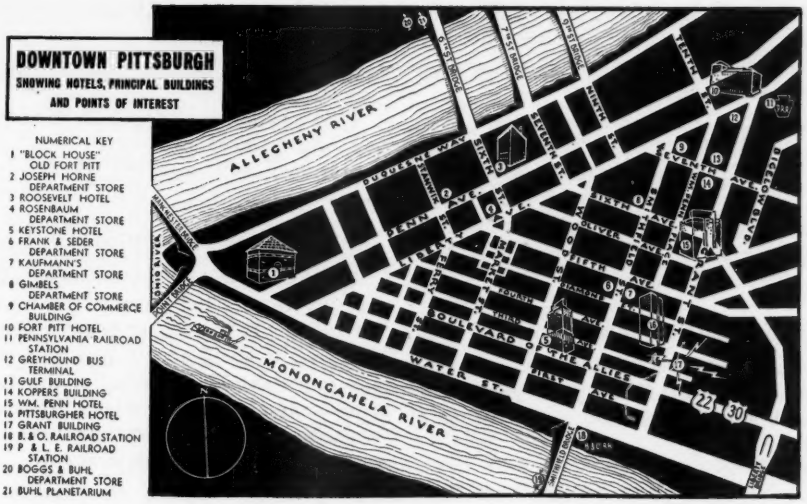
Date..... Signature.....

Representing.....

IMPORTANT: Mail request for room reservations to:

Mrs. Emily Cullison, Pittsburgh Convention Bureau, Inc.,
Chamber of Commerce Building, Pittsburgh 19, Pa.



metic Act with its far-reaching regulations and the interpretation placed upon these regulations by the Administration. To lead this discussion the Commissioner of Food and Drugs of the United States will be in attendance.

The future position of pharmacists in the various branches of the government service will be a major topic for discussion at these meetings when the report of the Committee on Status of Pharmacists in the Government Service is received.

What the position of pharmacy as a profession shall be with respect to the future educational and regulatory program of the profession will be determined by the delegates at this meeting when they act upon reports dealing with pharmaceutical education and licensure.

How to improve the observance of National Pharmacy Week and make it a force for increasing good in promoting the health and welfare of the people of our country is another topic that will be sure to arouse spirited discussion.

The professional relations program of the ASSOCIATION, its policy with respect to social and economic progress under the various types of proposals now being advocated and procedures for expanding the influence of the ASSOCIATION through its Local and Student Branches, as well as through various public relations programs, will also receive a large share of the attention of the delegates.

Sessions of the House of Delegates are scheduled as follows:

First Session—Tuesday, August 27 at 4 p. m.
Second Session—Wednesday, August 28 at 1:30 p. m.
Third Session—Thursday, August 29 at 9 a. m.
Fourth Session—Friday, August 30 at 9 a. m.

Dr. P. B. Dunbar, Commissioner of Food and Drugs, will be on the program at the third session as will also Dr. Austin Smith, secretary of the Council on Pharmacy and Chemistry. This session will feature discussions on existing and proposed legislation dealing with barbiturates, food, drug and cosmetic regulations and plans for uniformity in legislation affecting pharmacy in other ways.

At the sessions of the House of Delegates the nominations for officers for the ensuing year are made and all resolutions are prepared for final adoption.

Sectional Meetings

Scientific Section

Four meetings of the Scientific Section have been arranged as follows:

Wednesday, August 28 at 9 a. m. and 1:30 p. m.
Thursday, August 29 at 2 p. m.
Friday, August 30, at 9 a. m.

Section on Practical Pharmacy

Wednesday, August 28 at 9 a. m. (joint session with American Society of Hospital Pharmacists and American College of Apothecaries)
Thursday, August 29 at 2 p. m.

Section on Education and Legislation

Wednesday, August 28 at 9 a.m.

Thursday, August 29 at 2 p. m. (joint session with Section on Pharmaceutical Economics and Conference of Pharmaceutical Association Secretaries)

Section on Pharmaceutical Economics

Wednesday, August 28 at 9 a. m.
Thursday, August 29 at 2 p. m. (joint session with Section on Education and Legislation and Conference of Pharmaceutical Association Secretaries)

Section on Historical Pharmacy

Wednesday August 28 at 9 a. m.
Thursday, August 29 at 2 p. m. (joint session with American Institute of the History of Pharmacy)

Related Organizations

American Society of Hospital Pharmacists

Tuesday, August 27 at 9 a. m. and 1:30 p. m.
Wednesday, August 28 at 9 a. m. (joint session with American College of Apothecaries and Practical Pharmacy Section)
Thursday, August 29 at 2 p. m.

American College of Apothecaries

Tuesday, August 27 at 9 a. m. and 1:30 p. m.
Wednesday, August 28 at 9 a. m. (joint session with American Society of Hospital Pharmacists and Practical Pharmacy Section)
Thursday, August 29 at 2 p. m.

American Institute of the History of Pharmacy

Wednesday, August 28 at 9 a. m.
Thursday, August 29 at 2 p. m. (joint session with Section on Historical Pharmacy)

Conference of Pharmaceutical Association Secretaries

Monday, August 26 at 9 a. m. and 2 p. m.
Tuesday, August 27 at 9 a. m. and 2 p. m.
Wednesday, August 28 at 9 a. m.
Thursday, August 29 at 2 p. m. (joint session with Section on Pharmaceutical Economics and Section on Education and Legislation)

American Association of Colleges of Pharmacy

Sunday, August 25 at 2 p. m.
Monday, August 26 at 9 a. m. and 2 p. m
Tuesday, August 27 at 9 a. m. and 1:30 p. m. to 3:30 p. m.

National Association of Boards of Pharmacy

Monday, August 26 at 9 a. m. and 2 p. m.
Tuesday, August 27 at 9 a. m. and 1:30 p. m. to 3:30 p. m.

Plant Science Seminar

Schedule to be announced later.

In addition to highlights mentioned, other unusual features and papers of practical interest to the pharmacist are being scheduled as this issue of the JOURNAL goes to press. As this important 1946 meeting of the ASSOCIATION is expected to draw a large attendance, it is urgent that pharmacists who have not yet made hotel reservations do so at once.

Hotel Reservations

All reservations are to be made through the Housing Bureau of the Pittsburgh Convention Bureau, which is located in the Chamber of Commerce Building. Under this plan, reservations for convention goers are not accepted directly by the Hotel William Penn or other hotels. This system assures reservation of rooms for all and makes it possible to avoid prolonged correspondence with several hotels when space is not available in the hotel of your choice. In such case the Housing Bureau will locate a room in another hotel, and pharmacists should therefore indicate their second and third choice.

Due to crowded conditions which still prevail, single rooms are extremely scarce. Wherever possible arrange to share a room with another pharmacist from your neighborhood. Otherwise it may be necessary for the Housing Bureau to suggest an arrangement for sharing a double room. ASSOCIATION officials believe that satisfactory housing can be provided for everyone, but normal choice of rooms cannot be expected at this time.

For the convenience of pharmacists a reservation application blank is reproduced on page 312. Fill it out today and mail to the Housing Bureau. The map on page 313 shows the principal downtown hotels, bus and railroad terminals and a few points of interest. The Convention Housing Bureau is located in the Chamber of Commerce Building shown at No. 9, and the convention hotel on the right central part of the map at No. 15.

The Hospital Pharmacist

EDITORIAL

BOARD REGULATION OF HOSPITAL PHARMACY

by LEO F. GODLEY

AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

SOME states are at last recognizing their responsibility for maintaining in hospitals the same standards of pharmaceutical practice legally required of retail pharmacies. That this has not been customary everywhere remains a source of amazement to those of us in hospital practice. It is quite clear that the proper regulation of hospital pharmacies is in the public interest.

The attorneys-general in Pennsylvania and Michigan have ruled that hospital pharmacies were responsible to the state board of pharmacy under the present law in the same manner as retail establishments. Indiana recently acted by regulation to place hospital pharmacy under the drug and pharmacy laws of the state, except that institutions of less than 30 beds need not have the pharmacy under the continuous supervision of a pharmacist. California, Maryland, New Jersey, Wisconsin and probably some others have similar requirements. New York registers hospital pharmacies and recognizes experience gained therein for licensure. Wherever the law requires a permit or license for the retail pharmacy, this should also apply to the hospital pharmacy so that institutions may have the advantage of regular inspections and advice on maintaining proper equipment facilities and service.

Some other states do not seem to have interested themselves in what goes on pharmaceutically within the walls of a hospital. This seems much out of order when we realize that the citizenry, through legislative acts, deem pharmacy a profession that must meet legal standards for the protection of public health. Never does a patient need expert pharmaceutical service more than when he is so ill that hospitalization becomes necessary. Nowhere in the profession is the highest skill of the pharmacist called upon more often than in an adequate hospital pharmacy.

There seems to remain, however, the need for many states to recognize that the preparation and dispensing of drugs is pharmacy, whether it is done in a building called a hospital or in some other kind of a building. Most of all, we need this recognition by every state board of pharmacy. Backed by the precedents mentioned, we hope that the enforcement agency in each state will take a definite stand, obtain the necessary interpretation or authorization to regulate hospital pharmacy, and guard it with the same public-spirited zeal warranted by all pharmacy endeavors.

In most states we believe there is a sound legal basis for such action in the pharmacy laws. These have a common objective: protection of the people. Progressive hospitals have recognized this fact and have voluntarily raised their standard of pharmaceutical service. These hospitals are making widespread appeals for persons that not only have a good educational background in pharmacy, such as offered by the Bachelor of Science curriculum in pharmacy, but who have additional qualifications in hospital pharmacy. These additional qualifications are receiving serious attention in some of our educational institutions to the extent of offering a Master of Science degree in hospital pharmacy. Many hospitals have instituted a training program for hospital pharmacy interns.

The trends in and needs of hospital pharmacy should be obvious. Since the public has required proper safeguards in nearly all states for the practice of retail pharmacy, it is somewhat surprising that many retail pharmacists themselves, and some of our state enforcement agencies, have a seeming complacency toward possible malpractice in institutional pharmacy. Effective control

is, of course, complicated by the many small institutions that may not be able to maintain a full-time pharmacist, but this problem has been satisfactorily met in Indiana and elsewhere.

Commendation is due those states—some that pioneered in this field years ago and others that recently expanded their enforcement program—which protect the citizenry from a heterogeneous group of untrained persons who were permitted to function in the stead of qualified pharmacists.

In view of the sound legal and practical significance of pharmacy laws, may we suggest that other states dust off their statutes and become cognizant of the authority vested in them?

You can help by writing to the attorney general and pharmacy board secretary of your state asking them for the legal status of institutional pharmacies under state law. Let them know we are awake to hospital pharmacy's obligations and needs.

RESTORATION OF WASTE ALCOHOL

by HARRY W. AUSTIN* and LOUIS C. ZOPF**

A SAVING of 365 gallons of 95% ethyl alcohol has been effected in the past three years by the pharmacy at the State University of Iowa Hospitals through the readjusting of alcohol used in the main operating room.

At the beginning of this study the operating rooms were using alcohol 70% by volume. But on the basis of investigations by Sister Mary John[1] and Philip Price[2] it was believed advisable to change to alcohol 70% by weight.

Alcohol 70% (by weight) made from 95% alcohol and distilled water is placed in sterile jars as a germicidal agent for the storing of sterile forceps. It is also employed as a hand and arm rinse in the final step of preoperative scrubbing. The quantity of alcohol used for these purposes is considerable.

The 70% alcohol in the forceps jars is periodically replaced with previously unused alcohol, the used alcohol being transferred to a special receptacle marked "waste alcohol." The diluted and contaminated 70% alcohol from the scrub basins is also transferred to the waste alcohol container.

When filled, the waste alcohol containers are returned to the pharmacy where they are placed under refrigeration for twenty-four hours. This reduces the solubility and precipitates much of the contaminating material, such as soap. The waste alcohol is then filtered twice through the same "qualitative" filter paper—rendering it perfectly clear. After filtering, the specific gravity is determined by means of a hydrometer and the corresponding percentage of alcohol obtained by referring to the Alcoholometric Table of the U. S. P. Obviously, the waste alcohol is always below the required 70% concentration, thus requiring the addition of 95% alcohol U. S. P. in calculated amounts to restore the solution to the proper strength. Thorough mixing and a second specific gravity reading, as a check on calculations involved, completes the procedure.

The alcohol may now be bottled in suitable glass containers labeled "Readjusted Alcohol" and as such is again ready for use in the preoperative scrubbing procedure. The amount of 95% alcohol used to readjust the waste alcohol is requisitioned and recorded as new supplies of alcohol, indicating the manner in which it has been utilized.

To check the possibility of changes in *p*H during readjustment, the alcohol was tested with a potentiometer after each step in the procedure. Slight variations were found as follows:

New unused 70% alcohol.....	*p*H 8.05
Unfiltered waste alcohol.....	*p*H 8.47
Filtered waste alcohol.....	*p*H 8.31
Filtered readjusted alcohol.....	*p*H 8.3

Twelve series of bacteriologic tests were conducted on 12 lots of waste alcohol and the corresponding readjusted products. The following method was used for the bacteriologic study:

One cc. of waste alcohol was diluted with 9 cc. of sterile distilled water. The 10 cc. of solution so obtained was mixed with 90 cc. of nutrient beef broth in a sterile Erlenmeyer flask. The same dilution procedure was followed for the readjusted alcohol, which in each case was prepared from the waste alcohol under study. The two flasks were then incubated at 37° C. for forty-

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** Professor of pharmacy, College of Pharmacy, State University of Iowa.

eight hours. After this period the alcohol-broth mixture of the waste product and the mixture of the readjusted product were streaked on separate blood agar plates. These were then incubated at 37° C. for forty-eight hours.

Bacterial colonies were observed growing on each plate of the 12 lots of waste alcohol (which varied in strength from 45 to 57% alcohol) but on no occasion was growth observed on the plates streaked with the readjusted 70% alcohol culture media.

Since no bacterial growth was observed on any of the plates streaked with a readjusted alcohol and beef-broth mixture, it was concluded that the waste alcohol filtered and readjusted to alcohol 70% by weight was inhibitory to the growth of nonspore-forming organisms and as such was safe to re-use as a preoperative scrubbing material.

Routine identification of bacterial colonies on the waste-alcohol streaked plates was not undertaken. It was felt that since the readjusted alcohol inhibited the growth of organisms it was unnecessary to isolate those found on the waste alcohol plates. In several instances, however, the colonies were identified as *Staphylococcus albus* and *Hemolytic Staphylococcus aureus*.

Economy of the readjusting procedure is apparent, though this was not the initial stimulus for its inauguration. Limitation of the alcohol supply during the war and in the immediate post-war period definitely encouraged our study.

REFERENCES

1. Mary John, Sister, THIS JOURNAL, 4, 90–92 (1943).
2. Price, Philip, *J. Am. Med. Assoc.*, 111, 1993–1996 1938).

CHOLINE AND CYSTINE PROVE HELPFUL IN CIRRHOSIS OF LIVER

Clinical trials by Dr. A. J. Beams of Cleveland confirm experimental evidence that choline and cystine may prove valuable in reversing the degenerative process which leads to death in cirrhosis of the liver (*J. Am. Med. Assoc.*, 130: 190, 1946).

Cirrhosis of the liver is a chronic disease characterized by an excess of fibrous tissue in the liver and more or less deterioration and atrophy of the liver cells.

Dr. Beams, who is from the Department of Medicine, Western Reserve University School of Medicine, treated 20 patients suffering from this disease.

Besides a high protein, low fat diet supplemented by yeast, the treatment consisted of the nutritional agents, choline and cystine.

Choline prevents the deposit of fat in the liver. Cystine is the chief source of sulfur in food which is a necessary constituent of a complete diet.

The principal contributing cause of cirrhosis of the liver is alcoholism, but it may result from chronic poisoning with metals or from infectious diseases, especially syphilis. Dr. Beams states that in his group of patients the incidence of alcoholism was about 85%.

Dr. Beams' study reveals that only patients with large livers were benefited by supplementing the special diet with choline and cystine. Twelve of the 20 patients with livers which were not enlarged did not respond to the treatment, whereas seven of the eight patients with large livers made a good recovery. Most of the patients were treated with a dosage of 2 Gm. of choline and 2 Gm. of cystine daily.

Citing the history of one patient whose life was saved by this treatment, the author says: "This case represents an instance in which choline and cystine appeared to supply the factors necessary to reverse the process in the liver. They could not be supplied by diet alone because the patient was not able to tolerate large amounts of food. In instances of this kind the choline and cystine are comparable to vitamin concentrates, which are often necessary in addition to diet in the treatment of certain deficiency diseases."

The author concludes with this cautionary statement: "It is important to emphasize the limitations of the treatment of cirrhosis. Up to the present time there has been no treatment which has been found that alters fibrosis of the liver. Recovery of liver function therefore must depend on the arrest or reversibility of the other pathologic changes which are found in cirrhosis."

NAVY LIAISON WITH A. PH. A.

Comdr. Paul T. Rees, (HC) USN, has been appointed by the Surgeon General of the Navy to succeed Lt. Charles W. Bliven as liaison officer between the Bureau of Medicine and Surgery and the A. PH. A. Committee on War Activities and Veterans Affairs.

Lt. Bliven has returned to civilian duties as professor at the George Washington University College of Pharmacy and is also acting executive officer of the College in the absence of Dean Briggs.

PHARMACISTS' STATUS RAISED IN VA

ESTABLISH PHARMACY DIVISIONS IN VETERANS' BRANCH OFFICES, NEW OPPORTUNITIES ARE OPENED

AS one step in the development of the plans for improved pharmacy service in the Veterans Administration grades for pharmacists are being raised to include P-3 and P-4, W. Paul Briggs, director of pharmacy service, has announced. These professional grades, now open to qualified pharmacists, carry salaries of $4149 to $4900 and $4900 to $5905, respectively. Formerly, pharmacists were limited to grades P-1 and P-2.

Pharmacy divisions will be established in each of the thirteen Veterans Administration branch offices. In each branch office Mr. Briggs plans to have a division chief in grade P-4 and an assistant to the chief in grade P-3.

Pharmacists in grade P-3 will also be used in the larger Veterans Administration hospitals. In activities having a pharmacy staff of three or more, a pharmacist P-3 will be in charge with a pharmacist P-2 as over-all assistant. At the present time there are approximately eight such Veterans Administration hospitals in operation. It is anticipated that the pharmacy staff of other activities will soon be expanded as the patient load and out-patient service develops, thus providing for more pharmacists P-3 in the near future.

In the past, the pharmacist in grade P-2 was in charge of pharmaceutical service in Veterans Administration hospitals. Also it was the practice to limit all other pharmacists on duty to grade P-1. Under the new program all pharmacists who are professionally qualified may be advanced to grade P-2 ($3397 to $4149) in instances where the pharmacy services justify personnel with such rating.

Under these new policies, thirteen pharmacists in grade P-4 will be required and approximately 21 pharmacists in P-3. The number of pharmacists in grade P-1 ($2644 to $3397) who may be advanced to P-2 could not be stated since this is a matter which must be adjusted locally on the basis of the job being performed.

Under present law, all new appointees as pharmacists must hold a Bachelor of Science degree in pharmacy from one of the accredited colleges and must be registered in one of the states.

Mr. Briggs said that he was confident that with the new grades for pharmacists, the existing thirty-seven field vacancies for pharmacists, in Veterans Administration hospitals would be filled promptly.

Currently all appointments in Veterans Administration service are classified as temporary until Civil Service can complete formal permanent appointments. In the instance of fully qualified personnel such change of status will probably be automatic. He also stated that inquiries and applications for appointment should be directed to local VA hospitals or branch offices, since under the decentralized plan of operation all personnel are engaged locally.

Currently vacancies exist at the following Veterans Administration medical activities:

Alexandria, La.
Batavia, N. Y.
Biloxi, Miss.
Cleveland, Ohio
Dayton, Ohio
Dearborn, Mich.
Ft. Howard, Md.
Hines, Ill.
Indianapolis, Ind.
Kansas City, Mo.
Lincoln, Nebr.
Little Rock, Ark.
Lyons, N. J.
Montgomery, Ala.
Muskogee, Okla.
Nashville, Tenn.
Oteen, N. C.
Reno, Nev.
Phoenix, Ariz.
Portland, Ore.
Salt Lake City, Utah
Sheridan, Wyo.
St. Louis, Mo.
Topeka, Kan.
Tuskegee, Ala.
Walla Walla, Wash.
Wichita, Kan.

Interested pharmacists should make application for appointment on Government Form 57.

Mr. Briggs suggested that applications might be made to branch offices in the case of men willing to accept appointment in any station within the branch area. Branch offices are located in the following cities:

Boston, Mass.
New York, N. Y.
Philadelphia, Pa.
Richmond, Va.
Atlanta, Ga.
Columbus, Ohio
Chicago, Ill.
Minneapolis, Minn.
St. Louis, Mo.
Dallas, Texas
Seattle, Wash.
San Francisco, Calif.
Denver, Colo.

Under the new requirements of Civil Service, Pharmacist P-1 applicants must have completed a four-year course and must hold a B.S. degree in pharmacy from a college accredited by the American Council on Pharmaceutical Education. The applicant also must be registered as a

pharmacist in one of the states or territories of the United States or registered in the District of Columbia.

For the P-2 position a pharmacist must have, in addition, at least one year of progressively responsible experience in pharmacy as owner, manager, or as a pharmacist engaged principally in filling prescriptions and compounding medicines in a prescription pharmacy, hospital or drugstore.

CIVIL SERVICE OFFICIALLY REVERSES ITS STAND ON PHARMACY

OFFICIAL notice appeared in the *Federal Register* of May 4 that the U. S. Civil Service Commission has reversed its opinion that no formal educational requirements are needed for eligibility to pharmacy positions under Civil Service. This concludes the Commission's controversy with the AMERICAN PHARMACEUTICAL ASSOCIATION, which contended that government pharmacists should meet modern standards for licensure and practice [see THIS JOURNAL, 6: 354, 1945; 7: 20, 1946, and 7: 55, 1946].

In announcing that formal education would now be required of pharmacist-applicants, the Commission stated that the official ratings to be offered were professional grades 1 and 2 ($2644 to $3397 and $3397 to $4149 per year). These ratings apply to government pharmacists under Civil Service except in the Veterans Administration, where ratings are subject to direction of the Administrator. It has been announced [see page 318] that in Veterans facilities pharmacists may advance to the professional grades P-3 and P-4.

"There is no good reason why the ratings should not be improved in other offices as well," commented A. PH. A.'s secretary, Dr. Robert P. Fischelis, "and this is the next step in the improvement of the rating of pharmacists in the Civil Service to which we shall dedicate ourselves."

NEW YORK HOSPITAL PHARMACISTS MEET

Dr. Curt P. Wimmer of the Columbia University College of Pharmacy was guest speaker at the May meeting of the Society of Hospital Pharmacists of the Metropolitan Area (N. Y.). His topic was "Contributions of Hospital Pharmacists to Pharmacy."

NNR

PRODUCTS RECENTLY ACCEPTED BY THE A. M. A. COUNCIL ON PHARMACY AND CHEMISTRY

Council descriptions of drug products are published regularly in This Journal as they are accepted. Rules upon which the Council bases its action appear below as recently revised, and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago 10.

PERTUSSIS IMMUNE SERUM (HUMAN).—Hyper-immune Whooping Cough Serum (Human).—A sterile serum prepared from the pooled blood of healthy adult human beings who have had "whooping cough" in childhood and who have received repeated courses of Phase I Pertussis Vaccine. The bloods to be pooled and processed are drawn about one month after a course or courses of vaccine, when the donor's serum agglutination titer is 1:2560 or higher. The serum may be distributed in the liquid form or as a vacuum dried powder. It complies with the requirements of the National Institute of Health of the United States Public Health Service.

Actions and Uses.—Vacuum dried serum may be administered intravenously or intramuscularly for prophylaxis and treatment of "whooping cough."

Dosage.—When exposure is only casual or of short duration, 20 cc. may be administered. Otherwise two 20-cc. doses may be given at three to five day intervals.

For treatment, three 20-cc. doses at forty-eight-hour intervals may be injected. A fourth dose may be necessary. Critically ill infants may be given 60 to 100 cc. intravenously, repeated one or more times.

PHILADELPHIA SERUM EXCHANGE, CHILDREN'S HOSPITAL OF PHILADELPHIA, PHILADELPHIA

Pertussis Immune Serum (Human): Vials containing vacuum dried powder representing 20 cc. of Pertussis Immune Serum (Human) preserved with merthiolate 1:35,000. Each vial is packaged with a 10-cc. ampul of sterile distilled water.

THEOPHYLLINE ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1945, p. 388).

The following dosage forms have been accepted:

CARROLL DUNHAM SMITH PHARMACAL COMPANY, ORANGE, N. J.

Solution Aminophylline with Benzyl Alcohol 2%: Ampuls 0.5 Gm. in 2 cc.

Solution Aminophylline: Ampuls 0.5 Gm. in 20 cc.

Tablet Aminophylline: 0.1 Gm.

EPHEDRINE SULFATE (See New and Nonofficial Remedies, 1945, p. 285).

The following dosage forms have been accepted:

PREMO PHARMACEUTICAL LABORATORIES, NEW YORK

Ephedrine Sulfate (*Powder*): 15 Gm., 30 Gm. and 120 Gm.

Capsules Ephedrine Sulfate: 24 mg., 32 mg. and 50 mg.

PENICILLIN (See New and Nonofficial Remedies, 1945, p. 214).

The following additional dosage form has been accepted:

WINTHROP CHEMICAL CO., INC., NEW YORK

Penicillin Sodium: 200,000 Oxford unit vials.

NICOTINAMIDE (See New and Nonofficial Remedies, 1945, p. 618).

The following additional dosage form has been accepted:

INTERNATIONAL VITAMIN CORPORATION, NEW YORK

Tablets Niacin Amide: 100 mg.

THROMBIN, TOPICAL.—Thrombin.—A preparation of thrombin, isolated from bovine plasma. It complies with the requirements of the National Institute of Health of the United States Public Health Service.

Actions and Uses.—Thrombin is intended as a hemostatic for topical application to control capillary bleeding in operative procedures. It may be applied as a dry powder or dissolved in sterile, isotonic saline solution. *It should never be injected.*

Dosage.—As a dry powder or in solutions containing 1000 to 2000 thrombin units.

Preparations and Tests

Thrombin may be prepared by the method of Seegers, *et al.* (*J. Biol. Chem.*, 146: 511, 1942). Oxalated bovine plasma is diluted fifteen-fold with water and acidified with acetic acid to a *p*H of about 5.1 to obtain a prothrombin concentrate by isoelectric precipitation. This precipitate is suspended in oxalated saline solution, dissolved by the addition of tenth-normal sodium hydroxide to *p*H of about 6.4 and the prothrombin is adsorbed on magnesium hydroxide cream. The prothrombin is eluted by decomposing the magnesium hydroxide with carbon dioxide, and the magnesium salts are then removed by crystallization, filtration and dialysis. The purified prothrombin is again concentrated by isoelectric precipitation and is then redissolved in isotonic saline solution. Optimum amounts of calcium nitrate and lung extract are added. The resulting concentrated solution of thrombin is sterilized by suitable filtration, standardized for potency, placed in ampuls and dried.

The lung extract used in the preparation of thrombin is prepared from fresh ground bovine lung tissue.

Thrombin, topical, is standardized to possess at least 10 units of thrombin per milligram of total solids. The unit of thrombin has the power to clot 1.0 cc. of fibrinogen solution in 15 ± 0.5 seconds at 28 ± 1° C. when tested by the method described by the National Institute of Health.

Thrombin, topical, a mixture of thrombin and sucrose, is a white powder, completely soluble in water or isotonic solution of sodium chloride. It contains not more than 1 mg. of protein nitrogen per 300 units of thrombin. When dried over phosphorus pentoxide under vacuum for forty-eight hours at room temperature the loss in weight is not greater than 1 per cent. The ash content of thrombin, topical, is not more than 5 mg. per thousand units of thrombin. When heated in an oven at 50° C. for two weeks, thrombin, topical, shows no loss in activity.

PARKE, DAVIS & CO., DETROIT

Thrombin (Bovine) Topical: 5000 units. Each ampul contains 5000 units of thrombin, packaged with a 5-cc. vial of sterile isotonic saline solution preserved with phemerol 1:50,000.

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1945, p. 97).

The following additional dosage form has been accepted:

WINTHROP CHEMICAL CO., INC., NEW YORK

Novocain Solution 2 per cent: 30-cc. bottles. Each cubic centimeter contains procaine hydrochloride 20 mg., sodium chloride 3.5 mg., sodium bisulfite 2 mg. and chlorobutanol 2.5 mg. as a preservative.

REVISED RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY

ACCEPTANCE of products by the Council on Pharmacy and Chemistry of the American Medical Association is governed by precise rules setting forth the requirements which must be met. These rules have just been revised after careful study, and are published below for pharmacists. In issuing the revised rules, the Council made the following explanatory statement:

Forty-one years ago, when the Council was established, it adopted a decalogue of Rules for the Acceptance of Proprietary Articles which has stood practically unchanged for these decades, with such adaptations of interpretation and application as were made advisable by changing conditions—changes in therapy, in the character of drugs and in the attitude of manufacturers.

The Federal Food, Drug and Cosmetic Act has made into legal requirements conditions which were formerly controlled only by the Council rules, and some of these rules have thereby become superfluous. In view of this added protection, the Council feels that it is desirable to revise or rescind certain rules which have become more of a hindrance than a help in its endeavor to provide informed guidance in the use of drugs.

One of these relates to the controversial subject of "protected" names. The Council has accepted only one proprietary name for any article, with the hope of checking the confusion that arises when a drug masquerades under many "aliases." It must be acknowledged that the hope has not been fulfilled. Manu-

facturers have continued to multiply names, and the chief result has been to remove such articles from control by the Council. It has therefore been decided to withdraw this rule and to admit multiple names—with the important provision that the manufacturer give equal prominence to the common "unprotected" name that is or will be provided; for example, "atabrine" would be promoted as "atabrine, brand of quinacrine."

If physicians will use the common name (quinacrine, in this example) in prescribing, writing and talking of the substance, they will avoid multiplicity of names. In withdrawing the rule, the Council does not wish to encourage the multiplication; it bows to reality.

The Council also broadens its attitude toward "advertising to the public," permitting such advertising when it is judged that its dangers are less than its benefits. This is not a new departure; it has been permitted, for instance, for the prophylactic external use of disinfectants. Again, the additional protection of the Food and Drug Administration makes it possible to extend the classes of articles which may be promoted provided the promotion is carefully supervised.

The Council believes that the time is ripe for a thorough revision of its rules and has adopted the following seven principles, with explanatory comments, in the belief that this revision will increase the service that the Council may render.

RULES GOVERNING ADMISSION OF PROPRIETARY ARTICLES TO NEW AND NONOFFICIAL REMEDIES

Rule 1. Composition.—The quantitative composition of preparations and articles submitted to the Council or considered by the Council for inclusion in New and Nonofficial Remedies must be made known and may be published.

Rule 2. Identification.—Suitable procedures and criteria for determining the composition or standardization of the submitted preparation or article must be furnished.

Rule 3. Advertising to the Public.—Preparations and articles promoted to the public for use in the treatment of disease will not be accepted except as specified in the following explanatory comments.

Rule 4.—Therapeutic Claims.—When an article is accepted, therapeutic representations by the manufacturers or their agents must be confined to those given in N. N. R. or accepted by the Council between revisions of N. N. R.

Rule 5.—Protected Names.—Proprietary names for medicinal articles will be accepted if the Council deems the use of such exclusive names not to be harmful to health and if the proprietary names are not given greater prominence in labeling and other promotional activities than the official names or the non-proprietary names adopted by the Council.

Rule 6. Patents and Trademarks.—If a preparation or product is patented as to process or product or both, the number of such patent or patents must be furnished to the Council. If the name of an article is registered or the label copyrighted, the registration (trademark) name and number and copies of the protected label must be furnished to the Council.

Rule 7. Unscientific and Useless Articles.—A preparation or an article will not be accepted if in the opinion of the Council it will not be in the best interests of the medical profession and the public.

Extensive explanatory comments concerning the revised rules appear in the *Journal of the American Medical Association*, 131: 216 (May 18), 1946. Those of particular interest to pharmacists are summarized below.

With reference to Rule 1 on composition, the Council points out that in the case of a definite chemical substance or mixture, a descriptive name satisfactory to the Council must appear on the label and in the advertising.

Rescinding a previous rule against the naming of diseases on labels, the Council comments that "the naming of diseases and therapeutic indications in the labeling may be necessary for proper instruction in the use of articles sold directly to the public. . . ."

In the opinion of the Food and Drug Administration, therapeutic indications are necessary for adequate labeling of most over-the-counter products, and are required under the regulations.

Under Rule 3 on lay advertising, it is pointed out that if a prescribed article is dispensed in its original container, any permanently affixed device that identifies the article to the consumer constitutes advertising to the public. This includes bottles which have the name of the article blown into the glass, and similar devices by which the name or other distinctive identifying mark is permanently stamped on the container, article, stopper or seal.

As the revised advertising rule is interpreted by the Council, a considerable number of self-medication items that were heretofore ineligible now may be considered for acceptance. The Council explains its policy as follows:

"Indiscriminate self-medication by the public involves grave dangers, such as misdirected and inadequate treatment, failure to recognize serious disease until it is too late for definitive treatment, and the spread of infectious diseases when hidden from a responsible physician. All these are involved in the advertising of drugs to the public, with the further dangers of suggesting by descriptions of symptoms to the minds of the people that they are suffering from diseases described, the dangers of the unconscious and innocent formation of a drug habit and the dangers of starting allergic reactions.

Self-Medication

"These dangers do not apply in equal degree to all articles, and there are instances in which more good than harm is likely to result from advertisements conveying truthful information to the public, if they do not mislead by undue emphasis or suggestion. The proper promotion of such articles will not preclude their admission to New and Nonofficial Remedies; but, in view of the potential dangers to the public, such cases must be carefully weighed and will be confined to the following groups:

"(*a*) disinfectants, germicides and antiseptics, provided they are promoted only as prophylactic applications to superficial cuts and abrasions of the skin;

"(*b*) laxatives when promoted in such a manner as is not likely to lead to their abuse;

"(*c*) antiserums and fractions thereof, vaccines and diagnostic reagents derived from infectious agents;

"(*d*) other preparations and articles which in the opinion of the Council could be safely used by the public for the relief of symptoms (such as antacids and analgesics).

"Each group will have to carry adequate and acceptable labeling statements such as 'for the relief of minor aches and pains' for analgesics, and 'for the treatment of occasional constipation' for laxatives.

"Aside from these specified groups, promotion of articles to the public for the treatment of disease precludes the admission to New and Nonofficial Remedies. 'Advertising to the public' includes all promotion of the article in newspapers, magazines, placards or circulars, as it may reach the patient, radio, films or any other devices. This also includes labels and labeling of drugs."

In any advertising for any product, manufacturers are held responsible under Rule 4 for all statements concerning therapeutic properties. These must be compatible with demonstrable facts.

Claims for nontoxicity are admitted only when they do not conflict with known facts. The Council cautions that a claim of lack of toxicity means only that toxic effects have not as yet been recognized with the doses that have been studied. Apparently justified beliefs concerning this point are often ultimately reversed by extended experience. The same is true regarding claims that drugs are nonirritating.

Drug Names

Although deleting the rule against multiple proprietary names for the same drug, the Council retains its belief "that medical science is promoted by the use of a single name for each drug, based on scientific principles and freely available to all. This would avoid much needless tax on memory with its attendant confusion and errors."

Experience has shown, however, restriction to one proprietary name tends to unduly prolong a monopoly by a single firm and prevents the control of the Council over competing brands, which could be made acceptable except that they employ competing proprietary names.

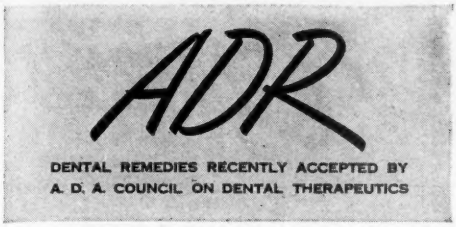
The Council therefore deems it "advisable to accept several proprietary names for the same article, provided there are no reasons which would render this especially objectionable and harmful, and provided the proprietary name is not given more emphasis in the advertising and labeling than the nonproprietary name provided by the Council or the U. S. P. or N. F. This means that accepted drugs should always be identified by adding the nonproprietary or official name when the proprietary name is used, as, for example, 'Luminal, brand of phenobarbital,' and 'Benzedrine, brand of amphetamine.'

"Physicians can protect themselves against much confusion," the Council points out, "by using the official names in speaking or writing of these drugs."

Proprietary names will not be recognized for articles which are included in the U. S. P. or N. F. unless the name was in public use before the drug was admitted to the official compendia.

With reference to Rule 7, it is emphasized that useless drugging is apt to be harmful. "This precludes the acceptance of articles which have no definite therapeutic value, of compounds or mixtures with an excessive number of active ingredients or with ingredients that are of no probable assistance to each other, and of articles which involve dangers of toxic effects disproportionate to their therapeutic value."

Mineral waters are singled out for special comment: "The Council has declared artificial mineral waters to be nonessential modifications of natural waters, that natural mineral waters are only one feature prescribed by spas and health resorts and that mineral waters are not eligible for consideration for acceptance as individual products, since there is no convincing evidence to show that the many therapeutic claims which are made for these preparations when bottled for individual use are valid."



Admission to Accepted Dental Remedies *means that a product and the methods by which it was marketed at the time of consideration were not found to be in violation of the published rules of the Council on Dental Therapeutics. A summary of the rules appeared in* THIS JOURNAL, *7:153 (April), 1946. Accepted products are reconsidered periodically.*

Accepted

ANESTHETICS—LOCAL*

Procaine HCl 2%, Epinephine 1:25,000.

Procaine HCl 2%, Epinephrine 1:50,000: Composition: See S. F. Durst Company, Philadelphia. Distributed by M. Larson Company, Inc., Chicago.

Procaine HCl 2%, Epinephrine 1:25,000: Each cubic centimeter is stated to contain procaine hydrochloride, 0.02 gm.; epinephrine, 0.00004 gm.; sodium bisulfite, 0.0019 gm.; sodium chloride, 0.0037 gm.; chlorobutanol, 0.005 gm.; and distilled water.

Procaine HCl 2%, Epinephrine 1:50,000: Each cubic centimeter is stated to contain procaine hydrochloride, 0.02 gm.; epinephrine, 0.00002 gm.; sodium bisulfite, 0.0019 gm.; sodium chloride, 0.0037 gm.; chlorobutanol, 0.005 gm.; and distilled water.

Procaine HCl 2%, Neo-Synephrine HCl 1:2500: Each cubic centimeter is stated to contain procaine hydrochloride, 0.02 gm.; neo-synephrine HCl (Stearns), 0.0004 gm.; sodium bisulfite, 0.0019 gm.; sodium chloride, 0.0037 gm.; chlorobutanol, 0.005 gm.; and distilled water. Marketed in tubes, 2.3 cc. Manufactured by the Safco Laboratories, Chicago.

Procaine HCl 2%, Epinephrine 1:25,000: Each cubic centimeter is stated to contain procaine hydrochloride, 0.02 gm.; epinephrine, 0.00004 gm.; sodium chloride, 0.0045 gm.; disodium phosphate, 0.0006 gm.; sodium bisulfate, 0.002 gm.; in distilled water.

Procaine HCl 2%, Epinephrine 1:50,000: Each cubic centimeter is stated to contain procaine hydrochloride, 0.02 gm.; epinephrine, 0.00002 gm.; sodium chloride, 0.0045 gm.; disodium phosphate, 0.0006 gm.; sodium bisulfate, 0.002 gm.; in distilled water.

Procaine HCl 2%, Neo-Synephrine HCl 1:2,500: Each cubic centimeter is stated to contain procaine hydrochloride, 0.02 gm.; neo-synephrine HCl 0.0004 gm.; disodium phosphate, 0.0006 gm.; sodium chloride, 0.0045 gm.; sodium bisulfate, 0.002 gm.; in distilled water. Marketed in 2.3- and 1.8-cc. cartridges. Manufactured by Oradent Chemical Co., Inc., a division of Mizzy, Inc., New York City.

* *Accepted Dental Remedies*, Ed. 11, p. 39.

COUNCIL REPORTS

Not Acceptable

DR. CORNISH'S TOOTH POWDER

Dr. Cornish's Tooth Powder is manufactured by the Cornish Laboratories, Berkeley, Calif. Letters from the firm are signed, "Dr. Robert E. Cornish, President." The product is stated to contain vitamin D, calcium fluoride in the form of fluorite, and urea.

Preliminary tests in the A. D. A. Bureau of Chemistry indicate that the bulk of the product consists of calcium carbonate and calcium phosphate. The firm has declined to reveal the composition.

Claims for the product are essentially that it cleans, hardens and preserves the teeth, that it stops decay in most small tooth cavities and that it cures most cases of gum bleeding within two weeks.

The Council is not aware of evidence adequate to support the claims for this product made in the advertising and on the labels. The use of the title "Dr." as part of the name of the product is misleading and in violation of the Council's rules. Dr. Cornish's Tooth Powder is therefore not acceptable for A. D. R.

Not Acceptable

KALMOR ETHYL CHLORIDE ANALGESIA DEVICE

EDITOR'S NOTE: The complete report concerning Kalmor Ethyl Chloride Analgesia Device may be consulted in the June 1, 1946, issue of the *Journal of the American Dental Association*. The principal objections to the product, cited by the Council on Dental Therapeutics, may be summarized as follows:

Promotional literature for the device, which recommends it for a wide range of indications, makes no mention of undesirable characteristics of ethyl chloride. No mention is made of the fact that this drug is inflammable. No mention is made of possible effects on the heart. No evidence is presented that the amount of ethyl chloride used under the conditions recommended will be always within safe limits.

The promotion stresses that no previous experience in anesthesia or analgesia is necessary for use of the product. The Council accepts no device for general anesthesia which is advertised as requiring no special training for its use.

The Council also questions the name "Kalmor Analgesia Device" as being uninformative and unacceptable under Rule 8.

The Council deemed the product unacceptable since, in its opinion, available evidence does not establish the effectiveness and safety of the device under conditions of use as presently advertised.

Science News Capsules

SLEEPY WORMS have doubled the twenty-year record of Rip van Winkle. Five specimens of *Tylenchus polyhypnus* were found asleep in a dried leaf of a rye plant that had been collected and stored away thirty-nine years before. It is reportedly a record for dormancy among the nematodes.

BAL, life-saving drug for victims of mercury and arsenic poisoning, is now available from Hynson, Westcott and Dunning. Originally developed by British scientists to combat war gas, the drug was a closely guarded secret until late in 1945.

THE SYNCHROTRON, powerful new type of atom-smashing machine, will be completed at the University of California next year. It will accelerate electrons to 300 million electron volts; and scientists believe that a larger machine of this type could produce atomic projectiles of one billion electron volts. With these incredible new energies it probably will be possible, not simply to "smash" the atomic nucleus, but to split protons and neutrons. The synchrotron combines features of the cyclotron and betatron with a revolutionary principle called phase stability.

MIGRAINE RELIEF within two minutes after intravenous administration of the sodium salt of nicotinic acid has been reported from New York City Hospital. The chemical is also suggested for idiopathic headaches, for which no cause is known. Transitory reactions caused a few patients to prefer the headache to the treatment.

A NEW ANTI-MALARIA DRUG will soon be available through pharmacies. Previously discussed in the literature as SN 7618, the drug will be called Aralen by the manufacturer, Winthrop Chemical Co. Action of the drug is much more prompt than that of atabrine or quinine, and a suppressive dose need be taken only once a week. The cost will probably be comparable to atabrine.

TEN TONS OF DOCUMENTS from the German Patent Office are now being sorted and evaluated here and will eventually be disseminated for the benefit of American science and industry.

HEART DISEASE, stomach trouble and even rheumatism can come from upset and conflicting feelings and thoughts. This newly recognized health problem was discussed at the meeting of the American Society for Research in Psychosomatic Problems. Brig. Gen. W. C. Menninger reported that almost one-fourth of the men in heart disease wards of 11 Army general hospitals in this country owe their difficulty to emotional disturbance; one-fifth to one-third of the cases of stomach or intestinal disease are attributable to the same cause.

THE ELI LILLY & CO. AWARD in bacteriology and immunology ($1000) has been won this year by 35-year-old Dr. Maclyn McCarty of the Rockefeller Institute for Medical Research. Dr. McCarty discovered that desoxyribonucleic acid can transform one type of pneumococcus to another. If the waxy outer capsule from a Type I organism is removed, the nucleic acid from a Type II organism can be used to form a new capsule for Type I. In forming the new capsule, however, the pneumococcus becomes Type II and all its descendants are Type II. This knowledge may aid in solving a wide range of problems in heredity and biochemistry since it shows a heretofore unknown biologic activity and specificity of this chemical within cells.

ARTIFICIAL METEORITES will be flung into the ionosphere from some of the V-2 rockets to be fired this summer. Pellets believed equivalent to the "stones from outer space" will be released from the giant rocket 75 miles above the earth. Observed by astronomical methods, and possibly tracked by radar, the synthetic meteorites are expected to provide information that will be helpful in studies of natural meteorites.

CITRIC ACID may now be produced by an improved fermentation process patented (No. 2,400,143) by Selman Waksman, co-discoverer of streptomycin. A special mold species and culture medium yield an output of practically pure citric acid, thus avoiding many costly separation processes. Rights are assigned to Merck & Co.

A ROCKET MOTOR developed for the Navy promises greater distances and speeds than ever before reached by jet-propelled weapons. It is believed that the motor would shoot the Navy's "Tiny Tim" rocket at more than 2700 feet per second, contrasted with the present speed of 900 feet per second.

TRACER EXPERIMENTS with iron 55, a new radioactive isotope, show that bone marrow manufactures hemoglobin much more rapidly than had been supposed and that the liver acts as a storehouse for iron. University of California researchers found that the radioactive iron appeared in erythrocytes within three hours after administration. Within twenty-four hours, one-third to one-half of all the absorbed radioactive iron had been transferred to the blood cells. Rats were used for the experiments.

ANTIHEMOPHILIC GLOBULIN from normal

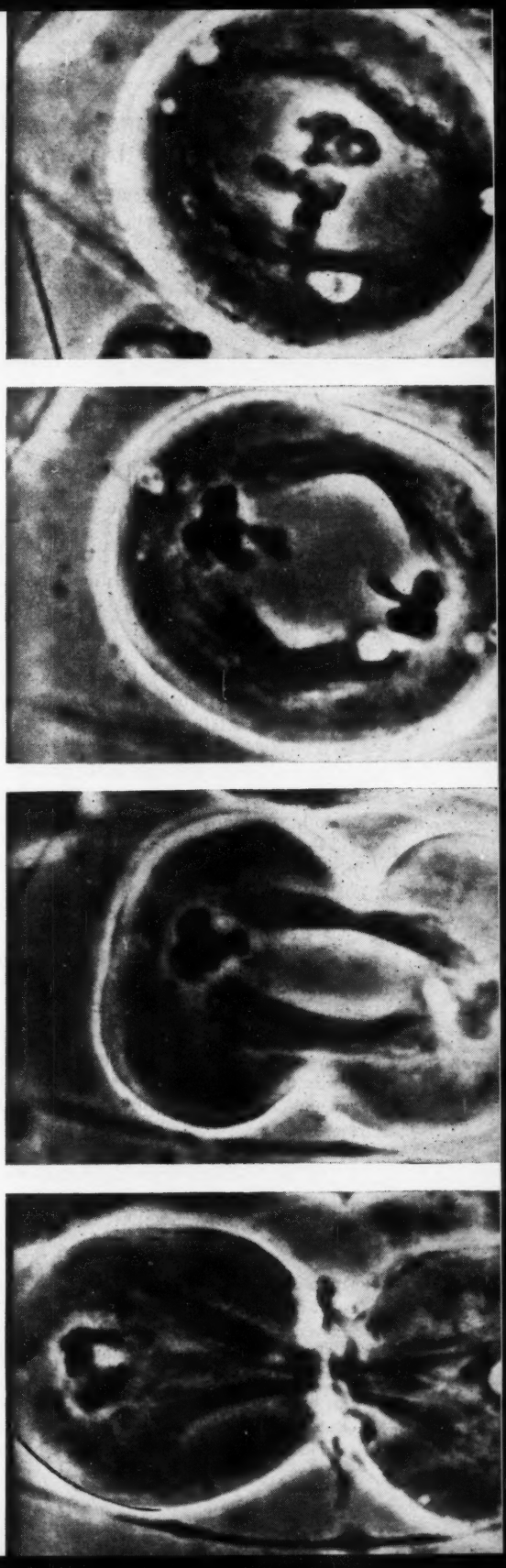
plasma eventually may be prepared in sufficiently concentrated form so that hemophilia victims can take it prophylactically, much like the diabetic patient takes insulin. This possibility was foreseen in reports on investigations of blood fractions at the meeting of the American College of Physicians. Globulin and thrombin are already being used to protect patients with hemophilia during dental extractions and other operations.

AN OCEANIC LAYER suspended between the ocean floor and surface off the coast of California has been discovered by Navy scientists. They are not sure what composes the 300-mile-wide layer, which was revealed by sonar devices utilizing reflected sound waves.

STOPPING BREATHING in both lungs for hours at a time has brought recovery to 6 out of 12 patients with advanced pulmonary tuberculosis. This treatment was achieved at the Columbia University College of Physicians and Surgeons by a type of iron lung which includes a device to equalize the pressure on both sides of the pleura and diaphragm. The lungs are placed completely at rest, thus permitting cavities to heal. The patient spends eight to eleven hours every day in the apparatus for a number of months. Practical value of the treatment compared to other methods of rest therapy has not yet been fully determined.

ATOMIC POWERED NAVIES of the future will make the submarine a major fleet unit of greater importance due to increased speed and range, Rear Adm. H. G. Bowen, of the Navy's office of research and inventions, predicts. "The Navy has no time to lose," he believes, "in adopting atomic power for surface ships and particularly submarines."

SUICIDES in the U. S. have been on the increase since V-E day, although throughout the war there had been a downward trend. The increase in suicide has been much more pronounced among men than among women. Metropolitan Life Insurance Co. statisticians blame the increase on sharp cutbacks in industrial activity with consequent unemployment as well as difficulties of veterans adjusting to civilian life.



MITOSIS.—The remarkable series of photographs on cell division (right) was selected from a German motion picture. Details of the chromosomes and their movements during this growth process, never before visible in living cells, are revealed by a new phase-difference microscope. Two of the microscopes were seized from the Germans as scientific booty of war. Although U. S. microscope manufacturers had been experimenting successfully with similar devices, the two instruments now in this country will help secure early production for research use. Because of sharp, intensified images, the phase-difference microscope is expected to have many uses in medical science.

GERMAN PHARMACEUTICAL FIRMS COMBED FOR USEFUL DATA

Teams of American investigators have been organized to comb the German pharmaceutical industry for information useful to American manufacturers. As in the case of earlier missions, the expenses of investigators from U. S. firms will be paid by their own organizations, but they will be appointed as Federal employees sworn to report all findings for public distribution.

FRANK E. MORTENSON DIES

Frank E. Mortenson, executive secretary of the Southern California Retail Druggists' Association, died in Los Angeles on May 25. Mr. Mortenson was active in association work for many years and had been a member of the A. PH. A. since 1910.

Born and reared in Iowa, he attended pharmacy college in Des Moines and later operated a retail pharmacy in Pueblo, Col. Carrying a deep interest in retail practice throughout his life, he is credited with helping many young men obtain their education and start in the profession.

Mr. Mortenson served as a member of the Colorado legislature and as a member and president of the Colorado Board of Pharmacy. Later he became president of the National Association of Boards of Pharmacy.

While practicing retail pharmacy in California, he was honored with the presidency of the Southern California Druggists' Association, and for the past sixteen years has been executive secretary.

For nearly a quarter of a century Mr. Mortenson served as legislative representative of the California Pharmaceutical Association and was instrumental in securing fair trade legislation for the state.

MICHIGAN NAMES SECRETARY

John H. Butts, East Lansing pharmacist, has been appointed to succeed Harold G. Seyffert as executive secretary of the Michigan State Pharmaceutical Association. A. PH. A. member Seyffert resigned as secretary to assume ownership of the East Lansing Pharmacy.

Prior to three and a half years of Navy duty, Mr. Butts had ten years of retail and wholesale drug experience.

FROM THE SECRETARY'S DIARY FOR MAY

—1st—

ALL day at Pittsburgh, Pa., arranging for the coming Convention which will be the ninety-second in the ninety-four years of the life of A. PH. A. Civil War and World War II caused the lapse in total meetings. In the morning to address the fine University of Pittsburgh College of Pharmacy Student Branch and present the charter. Then to lunch at the Faculty Club with Beal, Reif and Wilson; from there to the Mellon Institute for a conference on Convention details with General Chairman Hugh Muldoon, Local Secretary Wilson, Reif and Beal, and then motoring with Reif along the tortuous and hilly path beside the river to reach the William Penn Hotel. Here a session with the managers of the hotel and the Convention bureau, and succeeded in wangling rooms for 800 with possibility of more at various downtown hotels so nobody wanting to come to the meeting will be turned down.

Then to dinner at the University Club with Council Chairman George Beal and later to address the rejuvenated and enthusiastic Pittsburgh Branch of the A. PH. A. whose members will be our good hosts in August. Finally a drive to view Pittsburgh at night from Mount Washington and getting a great thrill seeing the Smoky City partly at rest and partly teeming with activity in the great steel-producing centers. Truly a sight to inspire and remember. And now bidding George Beal good-bye at the B. & O. station on our way to Chicago on the Capitol Limited.

—2nd—

Arrived on time in the Windy City but encountered the usual hotel reservation difficulty, this time at the Stevens. A pleasant visit at A. M. A. Headquarters seeing Austin Smith, Van Winkle and others and joined at luncheon at the Kungsholme by Ted Klumpp who happened to be in town. Much talk about barbiturate regulation, warnings on prescriptions and newer materia medica, finding us not far apart from the medicos in the broad thinking on this subject. At night to the meeting on accreditation staged by the American Council on Education where Rudd and others foregathered to hear all the professions discussed, except pharmacy.

—3rd—

To the Annual Meeting of the American Council on Education, listening with B. V. Christensen and Costello to the annual report of President Zook and made to realize how important a factor education has become in international affairs. Another luncheon at

the Kungsholme. This time with Charles O'Malley, our efficient advertising manager. After discussion of plans for the Hospital Pharmacy Institute with Dr. Hullerman, more sessions of the American Council on Education and then to the annual dinner of this august body with Costello, Rudd, Serles and Christensen who represented pharmacy, and sharing the table with a number of distinguished college presidents including Morrill of Minnesota and Walters of Cincinnati. After the dinner a long talk with President-elect Serles about plans for 1947 which lasted until the wee small hours.

—4th—

This morning the final session of the Council on Education and it was worth the whole trip to listen to General Bradley tell the educators about their responsibility to the veteran in the customary straightforward manner of this great soldier. His answers to questions from the floor were clear, decisive and completely frank. Among the educators and administrators present spotted Dr. Clothier of Rutgers who agreed with our estimate of the General's speech. After luncheon at the Stevens with Illinois State Association Secretary Joe Shine, a couple of hours of work in the room at the hotel and then to catch the Capitol Limited for Washington, meeting Director Russell of the Markle Foundation at dinner on the train and discussing philanthropies in the field of medicine thereafter.

—5th—

Arrived in Washington early and in time to quickly review accumulated mail with one of the faithful secretaries and then meet Dr. and Mrs. Powers for a most pleasant drive to Virginia Beach where the American Drug Manufacturers are in session.

—6th—

All day at Virginia Beach attending sectional meetings of the A. D. M. A. at the Cavalier, listening to some excellent reports and papers before the legislative, scientific and biological sections. These meetings are not overburdened with heavy programs so that there is time for leisurely discussions. At night the reception to President and Mrs. Lescohier which afforded opportunity to greet many friends in the industry including Eli Lilly, George Merck, Lincoln McNeil, Frank Law, John Reichel, Joe Noh, Homer Fritsch, Bob Swain, Wallace Werble and many others.

—7th—

At breakfast with George Merck learning the latest news of the political wars in New Jersey's primary. Then to the first general session of the A. D. M. A. at which Dr. Lescohier reviewed the year's activities as the retiring president. Glad of the opportunity to greet Drs. Perrin Long and Austin Smith and chat with John McPherrin just back from the Florida convention which we were unable to attend. After lunch, by bus to Norfolk and then to the U. S. Public Health Service Hospital for an inspection of the pharmacy under the watchful eye of Mrs. Gary, finding everything spick-and-span although the visit was unannounced. Now for a weary ride on the train from Norfolk to Washington occupying more than seven hours which the planes fly in fifty-five minutes and sorely tempted to follow the advice of veteran fliers and take to the air henceforth.

—8th–9th–10th—

And now for several days of intensive work at the desk clearing up accumulated routine and catching up on telephone calls and correspondence. Among the visitors these days were Messrs. Kinsey and Foster of U. S. Public Health Service to discuss hospital pharmacy standards, George Fiero of W. P. B. days, Major Aabel and Dr. E. C. Elliott. Among the accumulated mail and records, a reference in the Federal Register to the U. S. Civil Service Commission's reversal on the classification of pharmacists which brought some satisfation. Also a meeting with D. C. pharmacists on the proposed local legislation for the regulation of barbiturate sales.

—13th—

After a restful week end at home, the usual Monday morning rush. Late in the afternoon by train to New York for the meeting of the Proprietary Association.

—14th—

Early to the Biltmore Hotel to listen to the presidential address of Jim Hill of the Proprietary Association which covered considerable ground, reciting the war efforts and peacetime program of this organization. Corridor conferences with Jim Hoge, brilliant attorney for this industry, Fred Cullen, its medical adviser, and Secretary Barta. At noon by train to Trenton for the monthly meeting of the State Board of Health and then to spend the night at Red Bank.

—15th—

Early by automobile to Trenton and then on the train to Perryville, Md., to meet Messrs. Foster and Hutchinson of the U. S. Public Health Service for an inspection of the Perry Point warehouse which carefully protects the stores of medical and health supplies for the Marine Hospitals and other Public Health units. At lunch with pharmacist Foster at the White Horse and then by automobile to Baltimore, stopping at the U. S. Marine Hospital for an inspection of pharmacy facilities, and arriving in Washington in time for dinner.

—16th—

Most of the afternoon at the Veterans Administration with George Frates and Commander Briggs reviewing the contract and press release covering proposed pharmaceutical services for veterans with service connected disabilities.

—17th—

More conferences at the Veterans Administration on the contract for pharmacists through the state pharmaceutical associations and working late on the joint statement to be issued by A. PH. A. and N. A. R. D. on this subject. (*continued, next page*)

—18th—

In Washington over the week end partly because of the threatened railway strike and partly because of "unfinished business." Working late at the office to complete correspondence and preliminary reports on barbiturate legislation and the final draft of the letter to the state associations on the veterans contract.

—20th—

A busy morning with the mail and preparation for the work of the week which is to be spent partly in Alabama. At luncheon with Drs. L. L. Williams and H. Van Zyle Hyde discussing problems of the World Health Conference which is to convene on June 19. To Union Station meeting Miss Pinney of the American Social Hygiene Association for a hurried conference on international liaison in social protection activities and then on the Southern Railway train for Birmingham, Ala., enjoying one of the best train dinners en route since 1941.

—21st—

Arriving at Birmingham according to schedule, met by Gibbs, Watkins and many others of the good pharmacists of Alabama, at the Thomas Jefferson Hotel. The afternoon session of the convention was already in progress and proceeding beautifully according to schedule. After a brief acknowledgment of the welcome extended by President Bishop and Secretary Thelma Morris Coburn, and at the conclusion of the afternoon session, was able to view Birmingham from the tops of some of its surrounding hills from the Gibbs' car and could not help but compare this steel city of the south most favorably with Pittsburgh both as to terrain and industry. A brief and pleasant visit to Howard College with Dean Richards of the College of Pharmacy and then back to the Thomas Jefferson in time for the dinner of the Alabama Pharmaceutical Association and auxiliaries. Talked for thirty minutes to the assembled pharmacists and their ladies on "Pharmacy in the Affairs of the Nation." Later to meet many Alabama pharmacists and their charming ladies formally and informally at group gatherings throughout the hotel, thoroughly enjoying Alabama's famed southern hospitality.

—22nd—

Breakfast at 7:30 a. m. arranged by Secretary Thelma Morris Coburn means breakfast at 7:30 a. m., as we found out following the invitation to join the early birds who constitute the key men of Alabama when it comes to watching the interests of pharmacy in the various districts of the state. The telephone calls from the hotel office announcing breakfast began at 6:30 a. m. and came at 15-minute intervals so that nearly everybody was on time and the earliest bird really caught a worm all dolled up in a big box with a purple ribbon. Here we spoke to the County V-men about warning notices on prescriptions, Army pharmacy and the veterans' program. The next regular session program opened at nine and continued on a snappy schedule until noon, being interrupted only by a buffet luncheon, at which we enjoyed the company of Lawrence Lewis, followed by further addresses which we had to forego in order to make the 3:30 train back to Washington. In reviewing the events of this and the previous day it seemed that Thelma Coburn has done a splendid piece of organizational work for Alabama pharmacists with excellent technical and professional guidance from the best men in Alabama pharmacy, and President Bishop presided most ably throughout.

—23rd—

Arriving from Birmingham nearly two hours late but still in time to meet with the staff and lower the pile on the desk to some extent.

—24th—

Unable to leave Washington to address the Central States Food and Drug Officials Association at Trenton because of the railroad strike. Much telephoning to New York, Chicago and elsewhere postponing the important barbiturate conference scheduled for the coming Monday.

—25th—

A part of this day spent at Fredericksburg, Va., at the annual meeting of Friends of Historical Pharmacy, an organization which manages the Mercer Apothecary Shop. Greatly enjoyed the drive from Washington with Richard Deno and Tom Rowe, president and retiring president, respectively, of this organization and joined in appreciation of the fine work being done by Mrs. Carmichael who has looked after this historic landmark so efficiently in behalf of American pharmacy.

—26th—

After the morning spent quietly on a number of A. PH. A. projects, joined Major Aabel for dinner and later a conference on Army pharmacy progress. Also a final telephone conversation with President Moulton about to leave on a protracted western trip to cover pharmaceutical association meetings in the Pacific northwest and nearby states.

—29th—

After a busy day at the office enjoyed seeing President Truman and daughter Margaret receive degrees from George Washington University in Constitution Hall.

V. HUGH TYLER DIES

V. Hugh Tyler, secretary of the Iowa Pharmaceutical Association and a member of A. PH. A., died on May 3. He had been a leader in Iowa pharmacy for many years and took an active part in community affairs.

Dallas Bruner of Des Moines has been named acting secretary.

New ZEPHIRAN* CHLORIDE

TINTED SOLUTION 1:1000

ZEPHIRAN was widely used by the Armed Forces during the war period. Prior to that time and consistently since, this effective antiseptic enjoyed acceptance by the civilian medical profession and hospitals.

Therefore, it is a logical step to offer Zephiran Chloride Tinted Solution for everyday first aid treatment of cuts and superficial wounds. The handy applicator bottle in an attractive counter display carton will prove readily salable.

This new product is introduced under Fair Trade effective April 1

Efficient antiseptic

For First Aid Treatment of cuts and superficial wounds

No sting · No burn · Nontoxic

ZEPHIRAN CHLORIDE TINTED SOLUTION	M. F. T. Price
(1:1000 — ½ fluidounce) per bottle	$0.23

A liberal bonus goods offer is presented commencing May 1

Consult your wholesaler's salesman or Winthrop representative for details.

Supplied in attractive counter display carton of 24 convenient applicator bottles of ½ fluid ounce.

Complete WINTHROP CATALOG published in 1945-1946 American Druggist Blue Book and Drug Topics Red Book

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A. Ph. A. Branches

LOCAL BRANCHES

NORTHERN CALIFORNIA—"Types, 'Cures' and Treatment of Baldness" was the subject of a talk given by Dr. Warren Bostick of the University of California Medical Center, at the April meeting.

Dr. Bostick quickly stated that he had no cures for baldness. He pointed out that there are three types of alopecia (baldness): prematura, senilis, and areata. Alopecia prematura, a hereditary type, usually occurs at the age of seventeen and reaches its peak at thirty. Alopecia senilis occurs about the age of sixty. Alopecia areata can affect a healthy scalp in a few days and cures itself spontaneously if left alone. This is the type of baldness which hair tonics and various cures treat so successfully. Dermatologists usually prescribe some irritant, such as phenol or capsicum, for this type of baldness.

Vitamins, hormones, massage and irritants have been tried in the treatment of baldness with little or no effect. Dr. Bostick explained that the use of water on the hair does not cause hair to fall out. He recommended, however, that hair be thoroughly dried after washing as the scalp is a media for the growth of bacteria if not thoroughly dried. He stated that cutting hair short has no effect on its growth and that, contrary to advertisements for hair tonics, ordinary dandruff is a normal condition and has no effect on hair loss.

PITTSBURGH—Initial steps in arrangements for the 1946 A. PH. A. Convention, election of officers for the 1946–1947 term, and an address by Robert P. Fischelis, A. PH. A. secretary, marked the May 1 meeting of the Pittsburgh Branch.

Officers for 1946–1947 are as follows: Edward C. Reif, chairman; Charles H. Becker, vice-chairman; Stephen Wilson, secretary-treasurer. Edward C. Reif was elected delegate to the House of Delegates. Dean Hugh C. Muldoon and Dr. Stephen Wilson were recommended for appointment by the A. PH. A. Council as General Chairman and Local Secretary, respectively, for the national Convention.

Dr. Fischelis was introduced by Dr. George D. Beal, A. PH. A. Council chairman. Dr. Fischelis gave the latest information and current thinking on topics of national interest including Federal health insurance, the control of barbiturates, and the proposed warning labels on prescriptions under the Food, Drug and Cosmetic Act.

NORTH PACIFIC—A resolution concerning narcotic control in the North Pacific area was recently adopted by the Branch. A committee was appointed to assemble data and to contact city, county, state and Federal enforcement and judicial bodies. The committee consists of L. L. Riggs, chairman; Harvey Donnell, co-chairman; Walter Rhodes; and Norman Beckley. Fred Geue is secretary of the committee.

NEW YORK—A joint meeting of the New York Branch and the student branches of colleges in the New York City area was held on May 13. Dr. Robert L. Swain talked on "The Expanding Outlook for Professional Pharmacy." The meeting was sponsored by the regional board of Metropolitan New York student branches.

MICHIGAN—Members of the Branch met on May 28 in conjunction with the Michigan Pharmaceutical Conference, which was sponsored by the University of Michigan College of Pharmacy. A Branch dinner in the evening was followed by the business session. Later, Dr. John M. Sheldon of the University's Medical School presented an address, "Our Present Concept of Allergic Disease."

STUDENT BRANCHES

NEW student branches have been established at the University of Georgia, University of Kansas and University of Pittsburgh. Secretary Robert P. Fischelis personally presented a branch charter to the University of Georgia group, at the time of his trip to the Georgia Pharmaceutical Association convention, and to the University of Pittsburgh branch while in Pittsburgh to arrange details for the A. PH. A. convention. Charters for other new branches—including those recently organized at Western Reserve University, University of Kansas City, University of Toledo, University of Nebraska, and University of Puerto Rico—have been sent to the respective branch secretaries.

DISTRICT MEETING—Representatives of the student branches of Ferris Institute, Western Reserve University, Louisville College of Pharmacy, Butler University, and Purdue University convened at Mammoth Cave, at the time of the meeting of colleges and pharmacy boards. (*turn to p. 333*)

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George Scheffendecker, Louisville, Ky., was elected president of the district group; Steven Sielski, Lafayette, Ind., vice-president; Dorothy Ellis, Cleveland, O., secretary; and Virginia Curtiss, Big Rapids, Mich., treasurer.

A committee consisting of the officers will arrange a program to be presented at the next annual meeting of the colleges and boards of pharmacy of District 4. Other student branches in District 4 are invited to send representatives to the next district meeting.

UNIVERSITY OF PITTSBURGH—Dr. Robert P. Fischelis presented the charter to the Student Branch at a meeting on May 1. In his address to the members, Dr. Fischelis described the ever-changing role of the pharmacist, and the interrelationship of pharmacy with the other healing-arts professions on a community, state and national basis. He stressed the importance of a basic cultural education combined with the technical pharmaceutical training as an essential aid to pharmacists of the future in adapting themselves to the public health problems of tomorrow.

STATE COLLEGE OF WASHINGTON—On May 14, the Student Branch elected the following officers for the coming year: Katherine Frederick, president; Shirley Ostrom, vice-president; Marjorie Bidlake, reporter; and Haakon Bang, secretary-treasurer.

STATE UNIVERSITY OF IOWA—Norman Schoonover was elected president of the Student Branch to take office in the fall. Robert Parkhurst was elected vice-president; Warren Jacobson, secretary; Edna Mellick, treasurer; and Anne Peterson, Union Board Representative.

ST. JOHN'S COLLEGE OF PHARMACY—The history, chemical research and clinical use of prostigmine were discussed by Frank Munsh of Hoffman LaRoche, Inc., at the April 3 meeting of the Student Branch.

D.D.T. was the subject discussed at the meeting held on April 15. George Schneller of the Vick Chemical Corp., an alumnus, was the guest speaker.

OHIO STATE UNIVERSITY—Secretary Harvey Wolfarth reports a "rushing business" in keeping up with the applications for membership he is receiving. At a recent meeting, the branch enjoyed a talk by Dr. L. D. Hiner, faculty adviser, who explained some of the mechanics of cameras and showed colored slides of a trip to the shores of Lake Erie.

GEORGE WASHINGTON UNIVERSITY—Twenty-three students have recently reorganized the student branch of George Washington University which has been inactive during the war. Joseph M. Giovacchini has been elected president of the branch and Dorothy C. Robicheau has been elected secretary.

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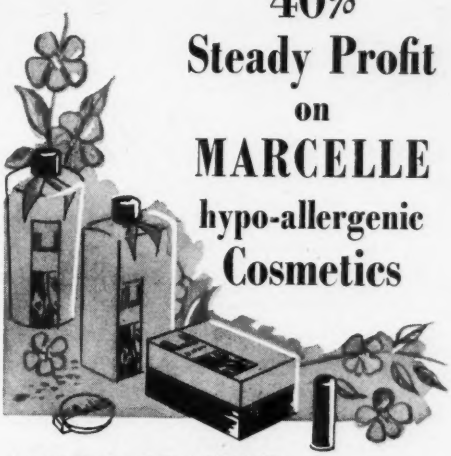

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Report

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The Parke-Davis campaign to better acquaint the public with the profession of pharmacy is continuing in the SATURDAY EVENING POST. This "Know Your Pharmacist Better" series of full-page messages was launched in September, 1944, and each advertisement since that time has carried its story to a potential audience of over fourteen million readers.

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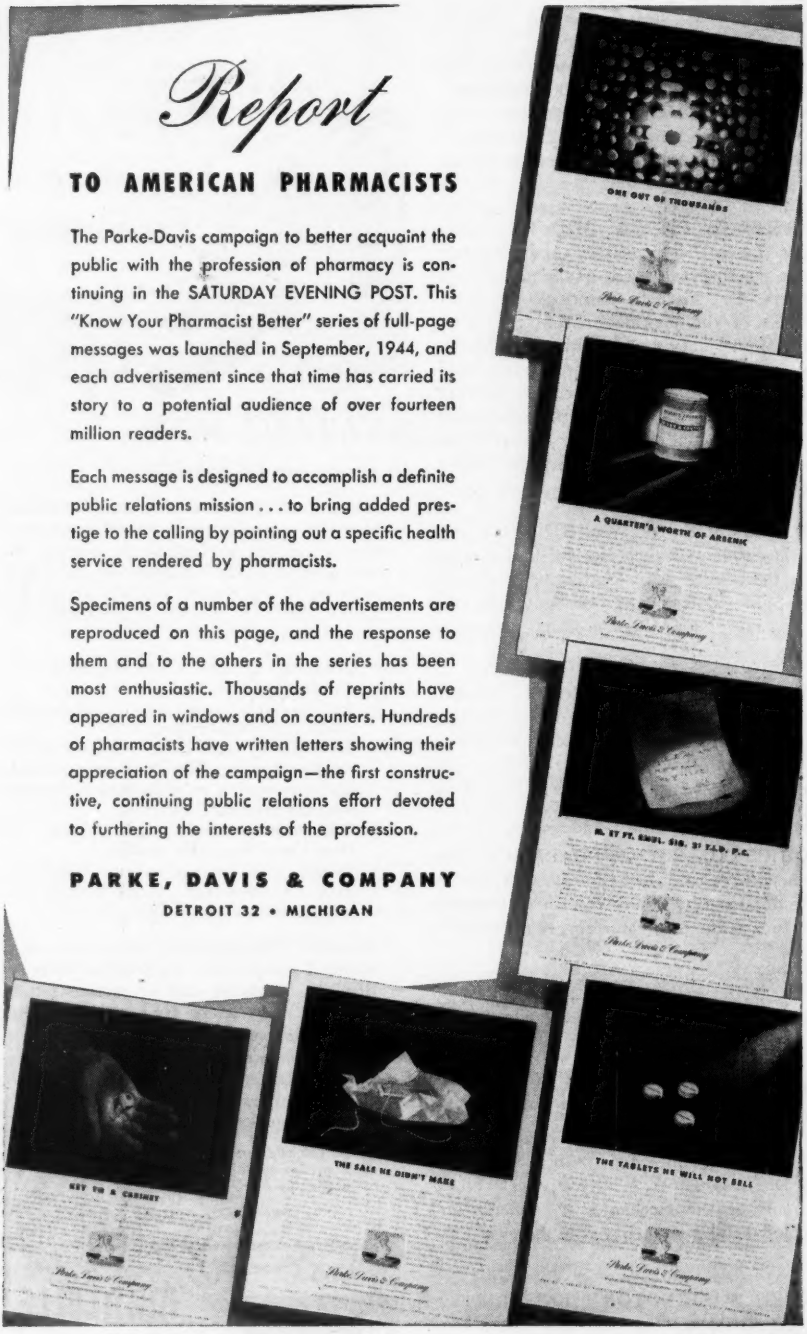
Specimens of a number of the advertisements are reproduced on this page, and the response to them and to the others in the series has been most enthusiastic. Thousands of reprints have appeared in windows and on counters. Hundreds of pharmacists have written letters showing their appreciation of the campaign—the first constructive, continuing public relations effort devoted to furthering the interests of the profession.

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